LIFE AT THE WATER'S EDGE:
AN ANALYSIS OF HUMAN BEHAVIOUR AND URBAN DESIGN
OF PUBLIC OPEN SPACE
AT THE WATER'S EDGE

BY

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to the required standard

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Date December 31, 1993
Abstract

Over the past decade, North America's urban waterfronts have experienced a renaissance. Urban waterfronts, which once provided the heart and lifeline of many North American cities by acting as a gateway connecting the American interior and the rest of the World, have undergone vast changes and are now the staging areas for numerous uses, to be enjoyed by all of the public, in many different ways.

Throughout history, a relationship between man and the water's edge has always existed. The water's edge is where life is most diverse and unique. The water's edge has traditionally been viewed as part of the public realm. A strong commitment to maintaining public access to the shore and waterways of the world has consistently been upheld, starting with the Justinian Law of ancient Rome and continuing through English Common Law as reflected in maritime ordinances.

Urban waterfronts have historically been the hub of transportation, trade and commerce. Along many waterfronts, port cities symbolize the history and maritime activities of these traditionally working waterfronts. As many of these waterfront cities first emerged, the waterfront was intimately linked with the city. However, in North America, with the rapid growth of commercial activity, warehouses, railway yards and expressways at the water's edge, cities became disconnected from their waterfronts.

Over the past decade, many North American urban waterfronts have undergone yet another transformation. The waterfront has become a valuable amenity, to be shared by all. Urban waterfronts, which were once stigmatized as a worthless industrial wasteland are now respected as a valuable asset for their views, large tracts of underdeveloped land, history, maritime industry and activity, environmental characteristics and their opportunities for recreation opportunities both on land and water. In addition, watercourses have been cleansed due to stricter environmental regulations, and a "back to the city movement" of people seeking places to live in the inner cities, have resulted in the redevelopment of many of North America's waterfronts.
As waterfronts undergo this transformation, an opportunity is afforded by the public to regain access to the water's edge. At the current time, municipal and provincial (or state) policies are in place which allow the public to require that a portion of land parallel to the water's edge be dedicated for public use, as waterfront lands are redeveloped. These lands are usually used as public open space, in one form or another. In the case of many urban waterfronts, the space is developed with a seawall and a bicycle/pedestrian path. However, all too often little or no attention is paid to including proper lighting, the types of surface materials and landscaping used, seating opportunities, relationship of the space to the street and other nearby spaces, the history and/or maritime character of the area, or public access points to the open space. As a result, the space is not used.

To address these concerns, this thesis challenges the popular way of planning and designing waterfront open space by focusing on the specific issue of how urban waterfront open space is designed and how it is used. To accomplish this task, the thesis presents an exploratory study which firstly documents the complexities involved in the process of urban waterfront change from industrial uses to a mix of uses including public open space. It then reviews the literature regarding the design of urban plazas, which share many of the same characteristics as urban waterfront open space, in order to define a list of design elements which could be applied when designing waterfront open space.

To test the similarities between the design elements of urban plazas and of urban waterfront open space, case studies examine two waterfront locations in the Vancouver Lower Mainland: Westminster Quay in New Westminster, and; Steveston Landing in Richmond. In these case studies, field observations are used to identify how these waterfront open spaces are designed and how they are used. This information is augmented by survey data collected on site through interviews with the users of the spaces to determine how far and by what means users arrive at the spaces and for what purposes and how frequently do they use the spaces. In addition, interviews held with the designers, planners and managers of the two waterfront open spaces establish what the guiding policies, design approaches and anticipated outcomes were prior-to the construction of the spaces.
To synthesize the findings of the literature and case studies, the seventh chapter compares the case studies and reflects on the urban design literature regarding urban plazas. In response to these findings, a series of design principles are presented which could be applied to guide the future creation of urban waterfront open spaces.

The final chapter summarizes research findings from the case studies and literature, and presents conclusions regarding the relationship between the design and use of urban waterfront open space, and provides insights regarding what other factors influence use.
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DEDICATION AND ACKNOWLEDGMENT

This thesis is dearly dedicated to the late Kelly Jane Bennett, who tragically passed away at a young age, but whose youthful spirit continues to live at the water's edge.

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"It is unfortunate that the (American) dream of growth and prosperity caused so many icons of the United States maritime legacy to become lost before American society reached a high level of maturity and sophistication to demand access to their greatest asset, the water's edge."

(Torre, 1989: 6)
Chapter One

Introduction
1.0 Introduction

1.1 Life at the Water's Edge: Context of the Study

Throughout history, a relationship has always existed between man and the water's edge. Humans are fascinated by and attracted to the waterfront. It is along the shores of the world's coasts, lakes and rivers, that man has often chosen to settle in the past. Therefore it's no surprise that at these same waterfront locations many of the world's great cities have emerged. The water's edge is where life is most diverse and unique (Torre, 1989: 3).

As reflected throughout history, the water's edge has been viewed as part of the public realm. Starting with the Justinian Law of ancient Rome, and continuing through English Common Law as reflected in maritime ordinances, a strong commitment to maintaining public access to the shore and waterways of the world has always been upheld (Freedman and Hagopian, 1986: 58). Even today, as seen in recent amendments to the United States Coastal Management Act, the Act requires that state waterfront management programs develop a planning process for the protection of access to public beaches and other coastal areas of environmental, recreational, historical, aesthetic, ecological or cultural value. The Act also states that special attention should be given to the recreational needs of urban residents for increased shoreline access (Harney and OCZM, 1979: 5).

Historically, the water's edge has been the hub for transportation, trade and commerce (Torre, 1989: 4). Along many waterfronts, port cities symbolize the history and maritime activities of traditionally working waterfronts (Breen and Rigby, 1985: 3-5). As many of these waterfront cities first emerged, the waterfront was intimately linked to the adjacent city and in most cases, provided the focus and center of activity for such cities (Torre, 1989: 4-5). However, in North America, with the advent of increased commercial activity, warehouses, railway yards and expressways at the water's edge, the waterfront and the city became disconnected from one another.

Throughout the twentieth century, numerous technological innovations have affected air, land and water transportation allowing industry to no longer be dependent on the waterfront and relocate to other more economical locations. As a result, the port facilities and waterfront industrial activities of many North American cities have become obsolete, leaving large tracts of underdeveloped derelict lands (Wrenn, 1983: 9).
Over the past decade, these tracts of waterfront land have become the stage for planning and developing new mixed use communities. During this period, changing perceptions of the urban water’s edge from a worthless wasteland to a valuable amenity have been initiated by stricter environmental policies promoting cleaner waters; a “back to the city movement” of people seeking places to live in the inner city, and; a rise in the number of urban dwellers seeking recreation opportunities within the city. As well, the romantic image and character of the working waterfront, which reflects the maritime histories of many North American waterfront cities, has become popular. As a result, many North American cities have once again become closely linked with their waterfronts.

The result has been a renaissance for many urban waterfronts. As redevelopment occurs, acquiring public access to the water’s edge is often a prime objective, as demonstrated in the case studies of this thesis. Municipal planning policies have reached a level of sophistication whereby acquisition of the water’s edge for public uses is made possible by implementing park land dedications as subdivision and development proposals are established.

In addition, environmental policies have been established which provide strict regulations regarding the materials and form of the region where the land touches the water, flood proofing standards and the types of land use and development which along the shoreline.

1.2 Rationale for the Study

Although achieving public access to the water’s edge has become a reality, policies which encourage and regulate how public open space along the water’s edge develops have not been firmly established. A void of these kinds of policies exists.

The case studies demonstrate this void of policies. Various planning policies and guidelines encourage and require public access and pedestrian linkages to the waterfront. These policy statements treat the waterfront as a valuable public amenity to be shared by all. It is ironic that the design of such a valued amenity is largely ignored.

As characterized in the policy documents of most Vancouver Lower Mainland municipalities, and other government agencies, only vague and incomplete statements are provided to guide the design and development of waterfront open spaces. Often, waterfront open space is either left undeveloped, or to the discretion of the developer to
develop. As a result, development of the open space is based on the economics of materials and construction costs rather than on thoughtful design principles.

Unlike other districts in most cities, waterfront open spaces do not have development guidelines. As development proposals are received for other city districts (other than single family dwelling districts), numerous policies regulate the types and amounts of amenity space, landscaping and open space. Municipal development planners and plan checkers carefully examine the relationship between these spaces and uses both on and adjacent to the development sites. Downtown urban plazas found at the base of office buildings are a testament of development regulations. For example, New York City has a requirement on the numbers and types of seating required in urban plazas (Whyte, 1984: 39).

In some municipalities, landscaping retention and replacement by-laws and development guidelines provide streetscape and landscape requirements for single family dwelling districts. Registered building schemes charged on property titles allow developers single family neighbourhoods, such as Westwood Plateau in Coquitlam, B.C., to regulate the driveway, sidewalk and retaining wall materials, as well as the number and type of trees and shrubs on a development site. Urban waterfront open spaces could benefit from similar review and regulatory processes.

As a result, the waterfront open spaces created are often not used. Perhaps this is due to poor lighting, too much shade, not enough or too many places to sit, bad access or many other reasons which could have been addressed in a guiding design principles document. In response to the void in policies, this thesis attempts to go beyond the current policies which achieve public access by challenging the popular way of planning and designing urban waterfront open space. To accomplish this task, the study focuses on the specific issue of how urban waterfront open space is designed and how it is used.
1.3 Purpose and Objectives of the Study

The purpose of this thesis is to study how the design of urban waterfront open space influences the way such space is used, and to provide insights as to what other factors influence use.

To accomplish this task, the study addresses the following objectives:

- To document the historical process of change of urban waterfronts;
- To review the urban design literature in order to establish parallels between the design of urban plazas and of urban waterfront open space;
- To analyze two case studies whereby the waterfront has undergone a transformation from an industrial waterfront to a mixed use waterfront and to identify the process and policies for acquiring public access to the water's edge;
- To analyze policies which regulate the design and development of urban waterfront sites and to identify policy statements regarding public access to the waterfront;
- To identify types of design elements used in developing urban waterfront open spaces;
- To identify the types of activities people perform in urban waterfront open space;
- To compare two case studies to analyze and determine how people use differently designed spaces;
- To demonstrate that a deficiency exists in policies and guidelines which encourage and regulate the design of waterfront open space;
- To provide implications and establish design principles for the development of future urban waterfront open spaces, and;
- To determine what other factors influence the use of urban waterfront open space.
1.4 **Scope of the Study**

Although waterfront open space can be presented in many different forms, ranging from beaches and environmental reserves where little or no development exists, to asphalt bicycle/walking paths, stone sea walls and wooden wharves, etc., this thesis focuses only on the study of urban waterfront open spaces where recent redevelopment has occurred. Due to time and resource constraints, the scope of the case studies is narrowed to examine only examples of such spaces along the banks of the Fraser River in the Vancouver Lower Mainland. As a result, two case study sites are studied in detail: Westminster Quay in New Westminster, and; Steveston Landing in Richmond. It is assumed that similar underlying policies and physical characteristics effect the two sites.

Within the two case studies, the thesis specifically examines the space directly adjacent to the Fraser River within the first 50 feet back from the high water mark *upland and parallel to the water's edge*. To provide a context for this space, reference is made to the demographics, land uses and zoning of adjacent neighbourhoods and a brief history of each site is presented. As well, policy contexts for the two sites are thoroughly reviewed.

This thesis limits its scope (as noted above) to the study of the design and use of the open space as perceived on the land side of the water's edge. Although there are various issues regarding the uses, design and activities which occur on the water side of the edge, and perception of development and open space at the water's edge as seen from the water side, these topics are beyond the scope of this thesis and would serve as excellent topics for other studies. This thesis does however make reference to on-water activities and design features as they are perceived from the land side.

As well, this thesis does not examine engineering aspects of fluvial and tidal impacts on the design of the water's edge. Rather, in a general capacity, the study refers to the physical aspects of the water's edge, as they affect the design of waterfront open space upland of the high water mark.

1.5 **Methodology**

As mentioned in the previous section, as well as reviewing the literature regarding the process of change of urban waterfronts and the design of urban plazas, a comparative case study methodology was adopted to collect and analyze data. Chapter four investigates the strengths and weaknesses of the method of analysis for the purposes of this thesis.
To determine which case study sites should be selected, an inventory was made of design elements present at various Vancouver Lower Mainland urban waterfront sites which had recently experienced redevelopment. From this inventory, a matrix was compiled and diagnostic studies were conducted to select two case study sites which shared similarities, but also had some differences. As a result, Westminster Quay in New Westminster and Steveston Landing in Richmond were selected.

To collect data for each of the case study sites, four methods were used. These methods included:

- Observation of physical traces;
- Counting instances of activities and groupings of open space users;
- Focused interviews with planners, designers and property managers, and;
- User survey questionnaires.

The data collected by each of these methods are presented and analyzed in chapters five and six. Chapter seven, compares trends identified from the data and establishes linkages between the physical trace data, which defines the design elements and the frequency of activities and groupings, and user survey data, which describe use.

1.6 Assumptions

The thesis involves a limited number of assumptions. For the most part, assumptions are noted in the text of chapter four (Method of Analysis) and chapters five and six (the case studies). There are however a few underlying assumptions which should be stated at the onset. These assumptions are noted below.

The study assumes that weather has a profound impact on the way an outdoor (meaning without cover or canopies) open space is used. In this case, all field observations were recorded on clear sunny days during the summer months. This way, there was a consistency of observations across sites and across weekday and weekend observation periods. The weather was therefore not responsible for extremely high or low frequencies of use. To further compensate for the minute changes in weather between observation periods, activities and groupings of open space users are not simply totaled in numbers, but rather relative frequencies of each activity and grouping are calculated for each observation period, so that relative frequencies rather than total numbers can be compared.
The study also assumes that the people included in the study, form part of a group defined as "people attending waterfront open space for recreation purposes". The activity data collected do not include the activities of maintenance workers, or people selling food, entertainment or other goods and services in the open space. In addition, although children under the age of 19 are represented in the activity and grouping data, their comments were not solicited in the survey questionnaire process, for the fear that they may not understand the intent of the questions and provide misleading answers. The children may have provided interesting responses, however, to keep the study consistent, since most children were with adults, children's parents or guardians responded to the survey on the children's behalf.

On the basis of initial diagnostic participant observation findings, it is assumed that only the most recurring activities be recorded for the case studies. These activities appear in the pre-coded list presented in chapter four as well as in the various charts which illustrate the frequencies of activities for the two case study sites. This does not preclude that other activities may have occurred on an infrequent basis. However, to obtain consistency throughout the study and limit the scope of the thesis, activities are limited to the above-mentioned lists.

Since this thesis examines a planning and design problem, economics are assumed not to influence the findings of the study or its recommendations. There is no doubt that if this study was further pursued as a doctoral or consultant study, an economic component would be involved in making any design or policy decisions. However, for the purposes of this thesis, in order to explore the influence of design elements on the use of urban waterfront open space and identify other influences, economic factors are excluded from the study.

Finally, it is assumed that this thesis does not try to solve the world's planning and design problems, but rather it is an exploratory study which provides insights into the relationship between the design and use of public open space at the water's edge in urban waterfront redevelopments. The study offers implications and design principles which could be used when designing future urban waterfront open spaces. Hopefully, this study will act as a catalyst to initiate future academic inquiry regarding the planning and design of waterfront open space.
1.7 Chapter Summary

To accomplish the goals and objectives of the thesis, the study is divided into various components, as reflected by the chapter structure. Various graphics are used to illustrate information presented in the text. Chapter one introduces the thesis by providing a context and rational for the study, and by defining the thesis purpose, objectives, scope and assumptions.

Chapters two and three review the literature pertaining to the redevelopment of waterfront lands and the design of urban open space. Chapter two examines the history and process of urban waterfront redevelopment in the context of North American cities, and describes how public access to the water's edge is regained as a result of this process. As well as establishing reasons for urban waterfront redevelopment, complex issues and planning tools related to the redevelopment process are identified. Chapter three reviews the literature regarding the design of urban open space as presented by Clare Cooper Marcus, William Whyte, Kevin Lynch, John Ziesel and others. In this review, various design elements used to develop urban plazas are identified. These elements provide the basis for comparison with the design features present in waterfront open spaces.

Chapter four explains the method of analysis used to collect and analyze information. Four methods are identified: observing physical traces, participant observations, focused interviews and user survey questionnaires. The pros and cons of each method are discussed.

Chapters five and six present the case studies of Westminster Quay (in New Westminster, B.C.) and Steveston Landing (in Richmond, B.C.). Each case study, provides a detailed account of the history, physical context, policy context, access context, demographic profile, and land use context for each site. Inventories of design features are collected for each site, using the physical trace information. Participant observation data regarding peoples' activities and groupings are analyzed and user survey questionnaires are reviewed to determine who uses waterfront open space; how they use the space; why they use the space; how they get to the space; how far they travel to get to the space, and; how often they use the space.

Chapter seven summarizes and compares the findings of the case studies in order to identify overall trends regarding the use of waterfront open space. As a result of this
analysis and other findings of the thesis (from the literature), a series conceptual design principles regarding the development of urban waterfront open spaces are presented. The anticipated outcome of the thesis is that these principles will be used by municipal planning departments to guide the development of future urban waterfront open spaces, and serve as the basis for further study and enquiry on this topic.

The final chapter, chapter eight, summarizes the findings of the thesis and establishes conclusions regarding the use and design of public urban waterfront open space. Following the Conclusion, the Bibliography lists textual resources and references, as well as the names of people interviewed during the research process. Appendices are attached and include tables and graphs which summarize the activity, grouping and user survey data collected. Copies of the user survey questionnaires are also included.

Combined together, the various components of the thesis provide a comprehensive review and analysis of the history and context of urban waterfront open space. Thesis findings are summarized in a series of design principles which could be used to guide the development of future urban waterfront open spaces.
Chapter Two

The History and Process of Regaining Public Access to the Water's Edge
2.0 The History and Process of Regaining Public Access to the Water's Edge

2.1 The Historical Process of Waterfront Redevelopment in the North American Context

Many of North America's urban centers have emerged along waterfronts, lakefronts and rivers. Waterways served as the first mode of transportation for the explorers, trading companies and pioneers who settled in North America. At certain points along the waterways, settlements arose, which over the last century have turned into thriving urban centers. Some of these waterfront cities supported port facilities and industrial activities as a result of international commercial activities and early twentieth century industrialization.

However, throughout the twentieth century, a number of technological innovations have effected air, land and water transportation allowing industry to decentralize away from the waterfront. This move has in turn caused the port facilities and industrial activities of many of waterfront cities to become obsolete (Wrenn, 1983: 9). The result, as experienced in the 1970's and 1980's, has been large tracts of unused deteriorated waterfront land, separating cities from their waterfronts. Wrenn suggests that a reason for this condition is that these cities have historically suffered from lack of vision and management in their adaptations to successive demands for new functions (Wrenn, 1983: 9). As well, Wrenn points out that traditionally, waterfront redevelopment policies have been disjointed by a web of loosely woven decisions by dozens of political jurisdictions and hundreds of entrepreneurs.

The Toronto Planning Department has identified a "typical waterfront development pattern" to describe the historical changes that have taken place along Canada's waterfront cities (Toronto Planning Department - Central Waterfront Planning Committee, 1976: 3-5). In this pattern, the process defined by Wrenn is presented in an eight stage model. These stages appear in Figures 2.1 through 2.8. In the initial stage, first settlement, the waterfront and the city have "intimate contact", as illustrated in Figures 2.1 to 2.2. Over time, as commercial port activities grow, this contact is lost as warehouses, railways and expressways create a barrier to public access and disconnect the city from the water's edge, as shown in Figures 2.3 to 2.7.
Figure 2.1 Original state, one small jetty.

Figure 2.2 City is intimate with waterfront.

Figure 2.3 More Piers are built.

Figure 2.4 Merchant port forms.

Figure 2.5 Landfill used to create finger piers.

Figure 2.6 Rail lines intervene to connect port to inland cities.

Figure 2.7 Port activities are at maximum, waterfront expressway and rail lines disconnect city from waterfront.

Figure 2.8 Port activity and industrial activity decline. Waterfront is rediscovered by the people (also the land developers and governments). New mixed-uses are incorporated.

(Taken from Central Waterfront Planning Committee, Toronto, 1976)
In the later stages of the model, industrial activities become run-down and obsolete, as depicted in Figure 2.8. Land values decrease and an opportunity for redevelopment exists. It is at this point that redevelopment (also termed revitalization) of the waterfront begins to take place. It is also at this time that an opportunity exists for the public to regain public access to and ownership of the water's edge and re-establish linkages and intimate contact between the city and its waterfront (U.S. Dept. of Commerce, NOAA and OCZM, 1980: 13).

2.2 Other Reasons For Urban Waterfront Redevelopment

As well as the "Historic Process", other factors have influenced the process of urban waterfront redevelopment throughout the 1970's and 1980's. To begin with, during the 1970's, campaigns against pollution were initiated in an attempt to clean-up the environment (U.S. Dept. of Commerce, NOAA and OCZM, 1980: 9). As a result, many waterfronts polluted by past industrial activities and sewer discharge were cleaned-up to a point whereby waterfront recreation activities such as swimming and sailing could once again be enjoyed within the city, at the water's edge.

Also during the 1970's, the "Oil Crisis" was experienced. Skyrocketing fuel prices sparked a "back-to-the-city" movement, initiated by people who did not want to commute in and out of the city (U.S. Dept. of Commerce, NOAA and OCZM, 1980: 9). This back to the city movement was accentuated by an increased in the number of smaller families, single parent families and families without children (Breen and Rigby, 1982: 6-7). The large tracts of derelict industrial urban waterfront land provided an ideal location to develop housing for these back to the city movers.

Another reason for urban waterfront redevelopment has been the flood of tax incentives and zoning relaxations provided by governments to developers to undertake the renovation of historical buildings and places (Breen and Rigby, 1982: 6). Old urban waterfront warehouses and piers provide an ideal medium for developers to renovate and reap these benefits.

As more of these older waterfront structures are instilled with new life, adaptive re-uses of such buildings begins to take place. For example, offices and residences can be found occupying renovated warehouse buildings such as on the piers of Philadelphia. Also, these same rehabilitated structures provide an ideal setting for urban festival market places, as

As a result of cleaner waters, a broader variety of uses at the water's edge and more dense urban populations, the demand for local recreation opportunities has increased. Furthermore, since disposable income has increased and people value that more time is spent on recreation, there is a demand for more recreation opportunities within cities (Johnson, 1984: 18-30). As urban waterfronts redevelop, an ideal opportunity exists for the public to regain access to the water's edge and thus provide potential for both onshore and on-water recreation activity (Dept. of the Interior, 1980: 1-9).

In all of these reasons for waterfront redevelopment, bringing people back to the water's edge is an underlying theme.

2.3 Complex Issues Involved in Waterfront Redevelopment

Urban waterfront redevelopment is more complex than the development and planning of most inland projects. There are a number of issues identified in the literature which impact urban waterfront redevelopment. The United States Office of Coastal Zone Management (OCZM) identifies some of these issues. To begin with, the waterfront presents numerous technical challenges. Waterfronts, unlike other urban development sites, are subject to tides, erosion and flooding. Redeveloping waterfront lands requires expensive measures to bulkhead, dyke, breakwater and secure the water's edge. If these measures are not undertaken successfully, both developers and government can be liable for damages incurred by the water (Dept. of Commerce, NOAA and OCZM, 1980: 10).

Since waterfronts are usually located where the original townsite of a city emerged, there is often fragmented ownership of the land adjacent to the water's edge (and sometimes water lots along the edge). In the United States, many waterfront property owners have riparian rights to exclusively use the water abutting their properties. In Canada, as can be seen in Coal Harbour, Vancouver, water lots are owned (from old land titles) by the owners of abutting waterfront lands. Obtaining access to and along these types of waterfronts presents a complex challenge. In such cases, the question regarding what is or should be private versus public must be addressed.
When urban waterfront redevelopment occurs, there is often a competition between the uses that are to take place at the water's edge (Torre, 1989: 8-9). If the market is allowed to prevail, the land will be assigned to the best use to achieve the highest economic value. This often results in housing and commercial development, built by developers. However, parks, open space, streets, pedestrian/bike paths, recreation opportunities and other modes of providing public access to the water's edge also afford a high value. Therefore a conflict of interest exists at the water's edge. Not only does this conflict involve private and public interests but also political interests, and interests from the many different government agencies and overlapping jurisdictions involved at the water's edge. Torre suggests that the key word in waterfront redevelopment is "compromise". He states that a consensus between all the groups involved must be achieved and a successful balance of uses must be established. This, in turn will allow for greater diversity in expression along the water's edge and create a stronger base for repeatedly bringing the people to the water's edge (Torre, 1989: 8-10).

Before redevelopment occurs, waterfront areas are often extremely dilapidated and as a result carry with them very stigmatized senses of place. A challenge thus exists to change the public's perceptions of these underutilized, obsolete and often dirty industrial waterfront areas. It is crucial that the most appropriate balance of uses be incorporated into waterfront redevelopment projects to attract curiosity and invite people back to the water's edge (Eckstut, 1986: 25). The success of making these areas attractive to people will determine the success developers will achieve in obtaining financing or federal government grants to undertake such projects (Dept. of Commerce, NOAA and OCZM, 1980: 11).

2.4 Tools For Planning Urban Waterfront Redevelopment

In order to cope with the complex issues involved with urban waterfront redevelopment and for achieving public access to the water's edge, numerous planning tools have been presented in the literature. Not every tool will be appropriate for every situation; rather different mixes and variations of the tools is usually the case.

One solution presented by the United States Office of Coastal Zone Management is to appoint management councils to oversee the planning and development of waterfront areas (OCZM, 1980: 11). These management councils consist of a cross-section of people representing public, private, and government interests. The main reason for these councils is to organize and direct all of the other overlapping interests and jurisdictions involved in
waterfront planning. An example of such a council is the San Francisco Bay Area Conservation and Development Commission which has achieved great success in achieving public access to the water's edge by developing and implementing "Public Access Design Standards" (Dept. of the Interior, 1980: 16).

Torre suggests that planners try to create "windows" of waterfront activity whereby public visual access is targeted on key components of the waterfront, both onshore and on-water (Torre, 1989: 10). For example, the working waterfront consisting of functional maritime uses could be viewed as one window of activity. Another window could be an environmental waterfront view. He even suggests an international window of activity consisting of ships from around the world, as well as a waterfront dotted by restaurants and shops selling international cuisine and goods.

A more basic tool for bringing the public to the waterfront presented by Craig Whitaker, a Torontonian Architect/Designer, is to use the street system. Whitaker states that when waterfront areas are developed in the absence of streets and the buildings intermingle with the parks and open space, the public becomes confused as to what is public versus private space. In this case, the waterfront parks are often perceived as not for public use (Freedman, 1983: E3). A prime example of this situation takes place at Harbourfront, Toronto, where buildings and open space are mixed together and no street exist. This relationship is demonstrated in Figure 2.9. As a result, the public does not use or feel invited to use the open space on the site.

Whitaker suggests that flow and access be used as design tools to bring people to the water's edge (Freedman, 1983: E3). He uses the city of Rio De Janeiro as an example to prove his point, where a street divides the public (beach) and the private (buildings) realms. He also states that this type of plan was originally considered in 1912 for the Toronto waterfront by the Harbour Commissioners of that time (Freedman, 1983: E3).

Designer Stanton Eckstut also praises the street as being the best tool for designing "people places and bringing the people to the water's edge (Eckstut, 1986:25-27). Eckstut emphasizes that public access and spaces need to be designed and not simply the areas left over after the buildings are constructed. He is also a firm believer that the streets should come first (before the buildings) and are the designer's tool to plan with; the buildings and uses will fall into place within that plan.
Figure 2.9 Harbourfront, Toronto.
Eckstut also suggests that every effort should be made to integrate and create direct linkages between the waterfront and upland areas. To accomplish this goal Eckstut points out that buildings should be built at grade and not on huge platforms which disconnect the water's edge from the city. Eckstut states that of all the physical connections to be made in waterfront developments, the most important are those to the water itself. Access to the waterfront must be maintained as an irrevocable public right, and the land at the water's edge and the means of access to it must be kept in public hands (Eckstut, 1986: 55).

It is clearly evident from the literature that there are no simple solutions or tools for achieving public access to the water's edge in urban waterfront redevelopment projects, but rather there are a number of different techniques that have been attempted on different sites and under varying circumstances. The question arises as to what is the appropriate mix of planning tools to use in order to achieve successful public access to the urban waterfront and link the city with its water's edge.
Chapter Three

Designing Urban Public Open Space
3.0 Designing Urban Public Open Space

3.1 Introduction

The previous chapter established that the process of urban waterfront redevelopment has allowed many North American cities to regain public access to their waterfronts. This achievement is reflected in policy statements such as Vancouver's Coal Harbour Official Development Plan which states "there shall be continuous and uninterrupted public access to the water's edge" (City of Vancouver, 1990). However these statements provide little direction as to how such space should be designed and for what use. These details are often left for the developer to decide.

As seen in the emptiness of many North American downtown plazas, the end result is often a space that is not used. A void exists in the provision of policies and guidelines regarding the design of public open space along the water's edge. This chapter reviews the literature concerning urban design, social behavior and public open space in order to better understand the process of design to establish various design elements and criteria by which public open space at the water's edge may be characterized.

3.2 The Water's Edge as a Public Open Space

Public open spaces at the water's edge in urban waterfront redevelopments are very similar to the spaces found in urban plazas and along busy streets. Krier defines the "square" and "street" as being the two components which comprise public urban space (Krier, 1979:17). Krier points out that it is in these spaces the typical functions of shopping, selling goods, eating, recreation and leisure take place. As well, squares provide a venue for cultural activities, and streets provide the means for human circulation (Krier, 1979: 17-19). Waterfront public open spaces possess similar characteristics. Throughout history, many studies have been conducted to research the design and social functions of urban plazas and streets. By reviewing the findings of these studies, design criteria can be established for studying public open spaces at the water's edge.
3.3 Who Uses the Open Space

In a comprehensive study of downtown New York City plazas, Whyte found that the first task is to watch the people to determine who uses the space and how they use it (Whyte, 1980: 16). Whyte recorded the numbers of males or females, in singles, couples or groups, who were occupying the space. Whyte suggests the best used plazas are sociable places with more couples and groups (Whyte, 1980: 17).

In a closer study of the five most used plazas in New York City, Whyte discovered that plazas which were attended by large numbers of couples and groups attracted more individuals. He also found that the most-used places tended to have higher than average proportions of women (Whyte, 1980: 18). Whyte attributes these observations to a condition which he terms "self-congestion" meaning what attracts people the most is other people. Although not many people would consciously admit they enjoy sitting in the middle of a crowd, Whyte discovered that they instinctively and unconsciously continue to find themselves there. For example, traveling street conversations were held in the middle of the pedestrian flow, and people were found to sit directly in the mainstream of movement. Rather than find a quiet, secluded space, people appeared to cluster together at certain points in the plazas (Whyte, 1984: 21).

From Whyte's study, it was also found that there exists daily and seasonal rhythms of plaza life. The daily rhythm was attributed to downtown office hours and daylight hours. The seasonal rhythm was due to changes in climate and weather experienced throughout the year (Whyte, 1980: 18-19). Whyte also found that there were sub-groups of plaza users who would frequent the plaza during certain hours of the day. Two such sub-groups of users were the lovers and the girl watchers. These groups would use the plaza as a meeting point for their activities.

3.4 Sitting Space

A key component of any plaza or open space is seating space. People will not come to relax by a reflecting pond or eat their lunch in a plaza if there is nowhere to sit.

Ironically, in Whyte's study of New York City plazas, he found that it was not the angle of the sun, the aesthetics of the seating and the surrounding buildings, the proximity to transit or the size of the space that affected where people sit. Instead he simply discovered that
people sat most where there were places to sit, and that a place to sit was the most
ingredient element of plaza use (Whyte, 1984: 28)(Cooper Marcus, 1990: 32). For this
reason, New York City's municipal government has established design guidelines
requiring one linear foot of sitting space for every thirty square feet of plaza space (Whyte,

Sitting space should not only be physically comfortable but more importantly should be
socially comfortable. This means choice should be built into the seating design so that
users have a choice to sit alone or in groups, up front, in back, to the side, or in the shade
(Whyte, 1984: 28). A variety of seating types should be provided in order to achieve this
condition. Cooper Marcus defines two types of seating: "primary" and "secondary" seating
(Cooper Marcus, 1990: 33). Primary seating consists of the benches constructed of both
hard (concrete) and soft (wooden) materials. Cooper Marcus suggests that too many
benches cause a space to become intimidating and monotonous (Cooper Marcus,
1990: 32).

Secondary seating consists of ledges, seating walls, steps, and mounds of grass. These
secondary seats can accommodate up to 50 percent of the total seating in a plaza. When
secondary seats are unoccupied, they do not appear devoid of life, as would a row of
empty benches, since they do not look like seats when unused (Cooper Marcus, 1990: 33).
To be functional, this form of seating should be between sixteen and thirty inches in height.

Sitting space can also consist of chairs. Chairs should not be fixed to the ground as this
limits peoples' choices regarding where to sit and may result in over control of the social
environment. Rather, chairs should be movable (Whyte, 1984: 34-35). Whyte observed a
body language of movement in the way people choose vacant chairs and then position them
to define their personal space while being careful not to disturb neighbouring plaza users'
space (Whyte, 1984: 35). Invasion of a neighbouring user's space might lead to tension
and withdrawal and the neighbouring user will either move their chair or be scared off
(Sommer, 1974: 202-208).

A variety of orientations of seating is also an important. This includes variety in what is
seen while seated for people differ in their needs to watch passerby, water, foliage, trees,
distant views, and other people (Cooper Marcus, 1990: 36). Also, there should be a
variety of seating locations in both the sun and shade, so that people have seating choices
when they want more or less sun depending on the season, the weather and personal preference.

3.5 Microclimate

Sun, wind, trees and water are important components of public open space. In Whyte's study of Seagram's Plaza in New York City, he noticed that as the day progressed and the sun moved across the plaza leaving some areas in shade, the people also moved with the sun. In almost every observation, people would stand, walk and sit in the sun while the shaded area was empty (Whyte, 1980: 40). In the Northern Hemisphere, southern exposure (to the sun) should be capitalized on by designers.

Temperature and warmth are also important factors. People will not use an open space if it is too windy or cold. Often tall buildings create down drafts which are guaranteed to empty a plaza of its people. People tend to seek sun traps where they can escape from the wind and enjoy the warmth of the sun. In this respect, small open spaces function better than larger ones (Whyte, 1980: 44).

Trees are a valuable asset for an open space. Not only do trees shelter open space users from wind and sun, but they have a cooling effect from their transpiration process which provides fresh oxygen. Trees visually enhance an open space and can be used to delineate sub-spaces. They can also serve as a visual barrier blocking-out unwanted views of bad architecture, underground parking entrances, service ducts, etc. Seating should be integrated with trees to provide plaza users with seating choices by making use of tree-shaded areas.

Water can also be an attractive open space feature. Water can take the form of a fountain, reflecting pond, waterfall, or an abutting water body such as a lake, river or ocean. Water has a psychological and physical cooling effect, especially if you can touch it. Water is visually stimulating and creates a relaxing sound called white noise, which drowns out loud noises from the street. Water should be accessible to touch and sit by or it can create a sterile environment, as happened at Chicago's Buckingham Fountain which has an electric fence and "Danger - Keep Out" signs (Whyte, 1980: 49).
3.6 **Food**

Selling food within a plaza or open space is an excellent way to attract people and achieve "self-congestion". Food attracts people who attract more people (Whyte, 1980: 52). Food can be prepared and sold by street vendors or from bistro-type sidewalk cafes. In either case, people are given the opportunity for outdoor eating (weather permitting) which they love to do. Food creates excitement. Often one will be fascinated just to view all the different types of food and then, if they decide to eat, take pleasure in deciding what type of food to eat. People are intrigued by watching other people eat or line-up to buy food (Cooper Marcus, 1990: 43-46). Food is a sure way to create excitement in a public open space. Other than sitting, eating is the most frequent activity occurring in most urban open spaces.

3.7 **Triangulation, Public Art and Street Performances**

Triangulation refers to the condition where some external stimulus provides a linkage between people and prompts strangers to talk to each other as if though they were friends (Whyte, 1980: 94). Triangulation may be initiated by a beautiful view, or by commenting on a bizarre piece of public sculpture or art (Cooper Marcus, 1990: 40-42). Triangulation, the drawing of people together, can also be achieved by musicians and street entertainers such as mimes, magicians and jugglers.

Programmed events such as cultural festivals and sports events can also create triangulation. Vancouver's annual Canadian International Dragon Boat Festival, held at the B.C. Place Plaza of Nations on False Creek, is an excellent example of how people are drawn together in a public open space.
3.8 Effective Capacity and Undesirables

In his study of Seagram's Plaza in New York City, Whyte discovered that as a plaza fills, people will tend to cluster together rather than find quieter less dense places to sit. The area where people are located continues to get more dense until a limit is reached whereby a self-regulating factor takes place. When this point has been reached, it appears as though someone leaves just before someone new arrives, thus the area never becomes overly saturated with people (Whyte, 1980: 68). It is people who determine the level of crowding and they do it very well.

When public open spaces are not extensively used, a sub-group which Whyte and Cooper Marcus call the "undesirables", moves into the space. This group consists of homeless people, winos, teenage gangs, and drug dealers. These people usually do not harm other plaza users but they portray a gloomy and intimidating image which makes other plaza users uncomfortable and often scares them off. The reason these undesirables use such open space is usually because no one else is using it. This condition can sometimes be attributed to bad design decisions, such as having little or no places to sit.

The best way to rid undesirables from public open space is to get more people to frequently use the space. This way a self-policing mechanism is initiated where people keep watch over other people. The plaza of the New York Telephone Company in New York City was frequented by a group of teenagers and drug dealers until numerous movable chairs and tables and a lunch time buffet were added to the plaza. After these improvements were made, the undesirables moved on and the plaza was used by other people (Whyte, 1980: 62).

3.9 Public Open Spaces and the Street

Plazas and open spaces should be integrated and yet separated from the street. One should lead into the other so that it's hard to tell where one ends and the other begins. However, each must exist as a separate entity. To achieve this condition, the skillful incorporation of boundaries and transitions can be used. If a level change is incorporated into the design to separate the plaza from the street, the plaza should not be sunken or raised by more than a few steps from the street (Cooper Marcus, 1990: 39-40).
An ideal plaza has one or preferably two sides exposed to public rights-of-way such as the sidewalk and street. Steps should be shallow and inviting to attract people in from the street. Circulation and flow within the open space should connect with busy street corners and pedestrian thoroughfares along the street so people flow naturally off the street and into the plaza (or vice versa).

3.10  **Information, Signs, Paving and Street Furniture**

Information, signs, paving and street furniture should be used to guide people. Signs are a direct way to get information across (Cooper Marcus, 1990: 46). They portray massages such as "Keep Out!", "This way to the subway station", "Food Fair", or they can state the name of a street or building. In any event, signs should be in visible but tasteful locations which relate to their functions and, if possible, should be made of materials which suit the architectural theme of the plaza.

Street furniture, such as garbage receptacles, lamp posts and benches, can be positioned to subconsciously direct people where to go and to promote circulation in a certain way (Cooper Marcus, 1990:30-31). Differences in height, material types and surface treatments can also be used to separate spaces and direct people through an open space (Cooper Marcus, 1990: 39,43).

In order to summarize this sub-section, the following list of important issues to be considered when designing urban public open spaces is presented by Cooper Marcus:

**Design Review Checklist**

- Size
- Visual Complexity
- Uses and Activities
- Microclimate
- Subspaces
- Circulation
- Seating
- Paving
- Boundaries & Transitions
- Level Changes
- Planting and Trees
- Public Art and Sculpture
- Fountains and Water
- Ground Cover
- Food and Vendors
- Programs
- Information and Signs
- Maintenance and Amenities

Chapter Four

Method of Analysis
4.0 Method of Analysis

4.1 What Is Being Measured

This thesis examines how design influences use in urban waterfront open spaces. In this case, the dependent variable measured is "use". To measure this variable, the chosen unit of analysis is the "individual person". Babbie states that individuals are the most typical units of analysis for social scientific research. Individuals can be studied alone or in circumscribed groups such as students, workers, parents or voters (Babbie, 1986: 74-75). For the purposes of this study, individuals are also studied as forming a group defined as "people who attend the waterfront for recreation purposes". This study is therefore limited to studying this group of people.

The independent variables which affect the dependent variable, "use", are the "design elements" used to develop the open space in urban waterfront redevelopments, as defined in the literature review. To determine which combinations of these elements exist, five recently completed urban waterfront redevelopment projects in the Vancouver Lower Mainland were examined: Granville Island, Lonsdale Quay, Westminster Quay, Steveston Landing and Bridgepoint. Using field observations from what Zeisel terms physical traces (Zeisel, 1981:89-110), a diagnostic study was conducted where an inventory of design elements at each site was compiled and a matrix showing combinations of design elements was constructed.

Diagnostic studies are a powerful way of obtaining exploratory information at the beginning of a research project since they provide a general overview as well as illustrate any generalizations apparent in the data (Zeisel, 1981: 60). Diagnostic studies allow for deeper understanding of a topic and help refine concepts and hypotheses (Zeisel, 1981: 61). In his study, The Urban Villagers, Gans explains that he had no rigorous hypothesis to test and that in fact his findings were themselves hypotheses (Gans, 1962: 347). This thesis does much the same, by presenting exploratory research and findings on a topic which to date, has not been investigated in detail. However, diagnostic studies are not suitable for the precise measurement of the characteristics and relationships within a defined group and thus they must be complemented by conducting other descriptive studies (Zeisel, 1981: 61).
4.2 Method of Analysis: The Comparative Case Studies

From the matrix, two waterfront redevelopment projects were chosen as case studies on the basis of the similarities and differences in combinations of design elements within each. Each case study defines a single object, the urban waterfront public open space, for which the boundaries were delineated. Within each, the design elements comprising the space, the relations among elements and contextual influences were examined.

More importantly, the case studies were compared to each other to determine how different combinations of design elements affected use of the public open space at the water's edge. The comparative case study method is good for yielding specific analytical statements regarding case study sites, but is weak for implying the results to other areas outside the case studies. Unlike a survey sample, which conducts analysis over a broad geographic area, a case study only looks at one or a few (in the case of this study, two) specific sites.

Furthermore, because a case study, like an experiment, attempts to examine one measurable variable as the result of one or a few control variables, and all other variables are held constant, it may often be the case that a phenomenon was not the result of the control variables but of some other influence (Smelser, Osherson and Warwick, 1973:44, 56-58). For example, the study found that weather has a large impact on how many people attend the urban waterfront. Other side effects one might not see within a physical environment when using the comparative case study method are history of events outside the study, instrument decay as measurement techniques change and maturation of the individuals being studied (Zeisel, 1981: 83-84).

4.3 Research Setting

Since this thesis studies environment and behaviour, data was collected from the field in a natural research setting. As seen in Gans' studies of The Urban Villagers (1962) and The Levittowners (1967), a natural research setting is ideal for diagnostic studies where one wishes to find out "what is actually happening"; what elements, relationships and dynamics are salient (Zeisel, 1981: 72-74). Also, case studies naturally take place in non-laboratory, non-contrived environments where observations and data are collected from the field. Natural settings allow the investigator to carry out an experiment, by manipulating part of
the physical environment, a particular social behaviour, or a policy. Natural research settings also allow for situations, settings and events that reflect theoretically relevant questions (Zeisel, 1981: 75).

4.4 **Method of Collecting Data for Analysis**

In order to collect data for this thesis, the study uses multiple methods of analysis. Zeisel points out that in case studies, especially those involving participant observation, multiple research methods are often required for investigators to obtain sufficient data about different aspects of an object (Zeisel, 1981: 66). Furthermore, using multiple research techniques to observe different traits of a complex phenomenon increases the convergent and discriminant validity of a research design. Because this study observes environment and behaviour relationships, three methods for collecting data were implemented. These three methods were:

1) Observing Physical Traces

2) Counting and Observing the Behaviour of People

3) Focused Interviews

4) User Survey Questionnaires

Together, these four methods provided sufficient data for the analysis. A brief discussion of each method, which follows, determines the strengths and weaknesses of each, and why they were chosen for this study.

4.5 **Observing Physical Traces**

As mentioned earlier in this chapter, observations of physical traces were used to compile an inventory of the different design elements apparent in the field. Physical traces consist of reflections of previous activity found in the physical surroundings, which were not intended to be measured by researchers (Zeisel, 1981: 89). Physical traces provide a durable physical record of what actually exists and are easy to record, count, draw or photograph. This thesis uses all of these techniques to document physical traces.
Observing physical traces provides an opportunity to determine what is missing from a scene or what props are used to separate, connect, personalize, identify or legitimize different spaces (Zeisel, 1981: 89-110), (Sommer, 1974: 202-209), (Freedman, 1975: 70-76). Physical traces provide information regarding adaptations for use of space as well as by-products of use. Because physical traces are durable and exist as part of the physical environment, one can easily observe them without affecting the behaviour which caused them or the results of an inquiry. Observing physical traces is therefore an unobtrusive method of data collecting.

A caution which must be considered when observing physical traces is that the investigator can take note of the trace only as a piece of data. Physical traces alone cannot be analyzed objectively because one would be assuming the intent of why the trace was left and by whom. Since physical traces posses this illusionary quality, they must be confirmed together with other data collection techniques, in order to be successfully analyzed.

For this thesis, physical traces were observed to diagnose preliminary findings regarding which design elements were apparent at the different urban waterfront redevelopment sites in the Vancouver Lower Mainland. From these observations, the elements were analyzed using a matrix and two case study sites were chosen.

4.6 Counting and Observing the Behaviour of People

As stated at the onset of this chapter, "individual persons" are the unit of analysis for this study. By observing the actors, the act they are performing, relationships between actors, the context and the setting of the actions, an inventory of behaviour can be accumulated. Such behaviour can be recorded in notes, maps, diagrams, photographs and videotapes.

Observed Behaviour can also be quantified by counting the instances of a type of behaviour over time at a distinct location using precoded checklists. In doing so, field observations become more precise or descriptive in appearance and complement previously recorded diagnostic observations (Zeisel, 1981: 122). In a study of how elderly people in Montreal use the space in indoor shopping malls, Sijpkes, Brown and MacLean conducted two types of observations. Ittelson describes these two observations types as being "place-centered" and "person-centered" observations (Ittelson, 1974).
The place-centered observations studied the activities of the elderly at certain focal points of activity in the two malls being compared. Counts of how many elderly people were performing what activity with whom were recorded and analyzed, providing quantifiable observation data. To complement these observations, person-centered observations, consisting of focused interviews with the elderly users of the space and the security guards who watch over the space, were conducted. The interview data thus confirmed the validity of the place-centered observations (Sijpkes, Brown and MacLean, 1983: 15-22).

This thesis uses the same place-centered and person-centered observation techniques as did Sijpkes, Brown and MacLean in their study. At each case study site, focal points of activity at the water's edge were determined. These focal points are illustrated in the site plans displayed in the following chapters. These focal points were selected because of their similarity in size and character, thus providing a consistent departure from which to conduct comparative analysis.

Within each of these focal points, numbers of activities and groupings of open space users were observed and recorded four times within a day: Noon (from 12:00 to 13:00), Afternoon (from 14:00 to 15:00), Late Afternoon (from 16:00 to 17:00) and Evening (from 18:00 to 19:00). Each observation period was one hour long, during which the number of instances of each activity and grouping were recorded over a five minute period, every fifteen minutes (i.e., four times in an hour). This one hour sequence of observations was repeated four times on a weekday and on a weekend day (Saturday or Sunday). Observations of the frequency of activities were recorded on pre-coded checklists. The categories of activities observed were:

- Primary Sitting in the Plaza
- Secondary Sitting in the Plaza
- Primary Sitting on the Boardwalk
- Secondary Sitting on the Boardwalk
- Walking in the Plaza
- Walking on the Boardwalk
- Standing Stationary
- Leaning on the Rail
- Adults Pushing Strollers
- Biking
- Wheelchairing
- Walking Dogs
- Kids Playing in Playground
- Adults Watching/Playing in Playground
During the same observation periods, the groupings of people were analyzed, to determine who uses the waterfront open space. Instances of the following groupings were counted:

- Single Males
- Single Females
- Males in Groups (2 or more)
- Females in Groups (2 or more)
- Male/Female Pairs
- Males/Females in Groups (>2)

The data was then totaled and averaged for the observation period. As well, since it is possible that factors other than the design of the open space could influence how many people use the space, frequency percentages were calculated for each activity and grouping to determine their occurrence relative to other activities groupings. The percentage calculations were then used to rank the highest to lowest order of activities and groupings, for each site. From these rankings, trends and patterns were identifiable. Overall trends were compared and analyzed against the weekend and weekday trends for the frequencies of activities and groupings. Tables showing the frequencies of activities and groupings for all observation periods, for the case study sites appear in Appendix A.

Observed behaviour is dynamic and allows the observer to experience a glimpse of the role of time on the life of a space. Often, activities being observed affect other activities (Zeisel, 1981: 114). The observer must decide how intrusive they wish to be when examining behaviour in the field. They can either be a secret outsider who observes from a distance and is unknown by those being observed, or a full participant living among the people being observed. Whyte has been very successful as a participant observer in the various studies he has conducted.

For example, in Whyte's participant observation study, A Street Corner Society (1955), his involvement with a street gang enabled him to uncover more than ordinary evidence (Zeisel, 1981: 114). However, other researchers such as Blau have not been so lucky. While comparing two job-placement offices, Blau introduced himself as a researcher and explained his study to those who were to be observed (Zeisel, 1981: 117). As a result, the people being observed altered their normal routines in order to impress the researcher. Therefore, study results were not a true representation. When subjects, who know they are being observed, fabricate their behaviour, the condition is known as the Hawthorne Effect.
In order to avoid the Hawthorne Effect, behaviour observations for this thesis were taken from the vantage point of a marginal participant. This way, due to time constraints, the observer did not have to win rapport with any social group. As well, observations of the units of analysis, the open space users, could be recorded without changing their routine behaviour.

4.7 Focused Interviews

As Whyte explains, interviewing must be linked to observation. Observation guides us to ask certain questions and interviewing helps to determine the significance of what we are observing (Whyte, 1982: 96). In order to confirm the validity of field observations, focused interviews with people involved must be conducted. For the purposes of this thesis, the users, the "individual persons" have been observed. By interviewing the designers and planners who developed the open spaces in the case studies, this study achieves a sense of the intended uses and activities that the spaces were designed to accommodate.

In order to accomplish focused interviews, this study incorporated what Zeisel calls an "interview guide", based on pre-interview diagnostic analysis. An interview guide consists of a conceptual map of topics, elements, patterns and relationships to be covered in a non-directive interview which uses open-ended questions (Zeisel, 1981: 137-149).

Rather than ask directed structured questions in a questionnaire format, this non-directed list of questions was complemented by probing for information where it was required. In order to avoid subjectivity, questions were restricted to descriptive or nonspecific questions. This way, results were not affected by observer biases. In the case of this study, professional informant bias, since the majority of people interviewed were design professionals. The focused interviews conducted were successful in achieving person-centered observations and thus confirming, complementing and validating the point-centered field observations.
4.8 User Survey Questionnaires

To further enhance the place-centred observations of activities and behaviour, a questionnaire, consisting of five questions was circulated to a random sample of respondents at the two case study sites on a weekend afternoons in July, 1993. Approximately thirty people were surveyed at each site. The intent of the questionnaire was to investigate why people come to the two waterfront open spaces, who uses the spaces, and where users come from. The questionnaire asked the following questions:

1. How far did you travel to get to Westminster Quay/Steveston Landing?
2. Which municipality do you reside in?
3. How did you get to Westminster Quay/Steveston Landing today?
4. What was your purpose for coming to Westminster Quay/Steveston Landing?
5. How many times in one year do you come to Westminster Quay/Steveston Landing?

In order to code the responses, questions 3 and 4 provided multiple answer options, as can be seen on the blank questionnaire forms in Appendix B. Questions 1, 2 and 5 requested open-ended replies, since their nature was numeric or factual rather than chosen from a series of options. The responses were then coded into groups and the relative frequencies of groups of responses were analyzed and compared.

In the following chapters, which present the case studies and comparative analysis, each of the research techniques explained in this chapter were used to collect and analyze information. As a result, conclusions are drawn in the final chapter regarding the success or failure of these methods in achieving the purpose and objectives stated at the onset of the thesis.
Chapter Five

Case Study: Westminster Quay
5.0 Case Study: Westminster Quay

Westminster Quay is the first of two case studies to be examined, in order to evaluate the relationship between the design and use of urban waterfront open space.

5.1 Location

Westminster Quay is situated on the northern shore of the Fraser River on the southern edge of the City of New Westminster, located in the centre of the Greater Vancouver Region (as shown in Figure 5.8). Adjacent to the Quay, the Fraser River splits into its South Arm and North Arm.

On the south side of the river is the Municipality of Surrey, with the Surrey Docks located along its shore. To the southwest is the eastern tip of Lulu Island, which is also part of the City of New Westminster, and Annacis Island, which is part of the Municipality of Delta. The eastern tip of Annacis Island accommodates Fraser Port's Annacis Terminal and Fraser Wharves, where Canada's west coast auto port, which serves 25 auto makers from around the world, provides intermodal linkages between rail, truck and auto carrier marine freighters.

Directly to the west of Westminster Quay, is "Renaissance Square", a medium density residential complex. To the west of this development is a tract of land which accommodates heavy industrial uses involving the processing of forestry products, pulp and paper.

Directly to the north of the site are the Canadian Pacific Railway tracks, the B.C. Transit SkyTrain elevated guideway and a commercial district, located at the base of the slopes of New Westminster. Further to the north, on the slopes, are single family and medium to high density residential neighbourhoods and Douglas College.

To the northeast is the historic Downtown District of New Westminster, in which are located numerous commercial, retail and office uses. Some of the larger public offices located in this area include the B.C. Assessment Authority, the Provincial Court House and the Fraser River Harbour Commission (Fraser Port Authority). To the north of the Downtown District is New Westminster Municipal Hall.
Figure 5.1 Westminster Quay: Entry to open space from parking lot.

Figure 5.2 Westminster Quay: Open space in front of market, Inn at the Quay hotel and Fist Capital Place offices in background.
Directly to the east is the Front Street elevated parkade, which provides off-street parking for the downtown area. Between this parkade and the Fraser River is the location of the vacant New Westminster Pier, a portion of which currently accommodates off-street parking for Westminster Quay, but is proposed to be developed with high density residential development in the near future. To the east of the pier is the Pattullo Bridge, which provides automobile and pedestrian access to Surrey and points beyond to the south. Parallel to the Pattullo Bridge are SkyBridge, which carries SkyTrain across the Fraser River, and a railway bridge, which serves as the Lower Mainland's primary rail crossing of the Fraser River.

5.2 Physical Setting

Westminster Quay consists of four vital components: the Esplanade, a festival market, an office building, a hotel and a residential neighbourhood (as shown in Figures 5.5, 5.7, 5.8 and 5.9). At the western edge of the Quay is a children's playground named Quayside Park. At the eastern edge of the site is the "Expo Tugger", a playground consisting of the old wheel house of a tug sitting on dry land. Here children and adults can enjoy actively playing with the dials and knobs inside the Tugger and imagine they are the Captain of the ship. Next to the Tugger is the berth for numerous boats which provide Fraser River tours.

Along the entire water's edge is the Esplanade, a public path consisting of a wooden boardwalk paralleled by a landscaped buffer and a brick paved walkway (in the residential areas). The Esplanade connects vital components of Westminster Quay and provides an important pedestrian linkage to the Downtown District.

Quayside Drive, the rail yards and the SkyTrain elevated guideway provide a buffer and limit access between the Quay and other parts of New Westminster. However, due to its waterfront location and southern exposure, the Quay benefits from views looking east, up the Fraser River towards the Pattullo Bridge, SkyBridge and the Golden Ears mountains; views looking south to the working waterfront of the Surrey Docks, and; views looking west to Lulu Island, Delta, the Gulf Islands and sunset beyond. Most of the open space at the Quay enjoys sun for the greater part of the day, due to the southern exposure.

Directly beneath the Esplanade boardwalk, the foreshore is developed with rip-rap of medium sized rocks, to maintain the water's edge against flooding and to provide for
Figure 5.8  The New Westminster Waterfront: Westminster Quay is in the centre foreground.
marine habitats. At some locations, such as in front of Renaissance Square (abutting the western edge of Westminster Quay), intertidal benches have been created and planted with intertidal marsh vegetation to further enhance opportunities for marine habitats to thrive (FREMP., 1991: 29).

The Westminster Quay site is relatively flat, and meets the Ministry of the Environment's minimum 2.6 metres above GSC datum, flood level, and the regulations of the City's Flood Plain Bylaw No. 5095 (City of New Westminster, 1987: 11).

### 5.3 History

Until recently, the New Westminster waterfront existed as an industrial area with limited public access. Today, after a revolution of changes in land use at the water's edge, the New Westminster waterfront now provides one of the best places for the public to get an overview of the many activities that occur at the water's edge along the Fraser River.

The City of New Westminster was incorporated on July 17, 1860, as the capital of the new Colony of British Columbia. At that time, New Westminster served as the West Coast's major supply centre and was considered the gateway to the interior of British Columbia (City of New Westminster, 1987: 1).

When the Canadian Pacific Railway (CPR) decided to construct its western terminus in Vancouver in 1887, New Westminster's dominance as a commercial centre began to decline. In the same year, the CPR extended a 9 mile branch line from Port Moody to New Westminster. As well, the Great Northern Railway (now called the Burlington Northern Railway) reached New Westminster in 1891, providing direct access to the United States (Mikichik, 1991: 102).

By the 1890's, New Westminster's waterfront had established a firm economic base. As British Columbia's primary industries experienced growth in the years preceding World War I, New Westminster's waterfront became a growth centre for fish processing and forestry product related industries, as well as being the commercial service centre for the Fraser Valley. Columbia Street, the City's principal thoroughfare, evolved as a retail district of regional importance (Mikichik, 1991: 103).
In this same period, port facilities developed along the waterfront to accommodate the transshipment of forestry products and general cargo. With the opening of the Panama Canal and the formation of the New Westminster Harbour Commission, New Westminster became an international freshwater port (Scott, 1985: 14). New Westminster and its port enjoyed economic prosperity during the 1930's and early 1940's. The growth of port facilities stimulated the growth of warehouse and related activities.

However, the construction of the Pattullo Bridge in 1937, and the realignment of regional traffic patterns through the construction of new highways and bridges during the 1950's and 1960's provided suburban communities with better access to Downtown Vancouver, therefore making housing development opportunities attractive in suburban communities such as Richmond, Surrey, Delta and Coquitlam. The realigned traffic routes, which were oriented towards the automobile, bypassed the Downtown District of New Westminster, resulting in a decline of retail activity in the downtown area.

In addition, in the 1970's, a movement towards larger ships and containerized cargo rendered New Westminster's port facilities to become obsolete, as reflected by a rapid decline in the volume of cargo handled by the port. At the same time, newer container and bulk loading facilities were being developed in Burrard Inlet, Robert's Bank, and the Surrey Docks (Hardwick, 1974: 160-161). At this time it became apparent that the long-term future of the New Westminster waterfront would realize the relocation or phasing-out of port and industrial activities, and the redevelopment of the waterfront for other uses including residential and public open space uses.

During the early 1960's, as a result of federal urban policies and funding strategies, the City of New Westminster initiated various studies regarding urban renewal in New Westminster. The urban renewal process required that the City establish a municipal planning department to secure and administer federal funding and to implement a renewal program and insure its conformance to a municipal official community plan (Corporation of City the of New Westminster, 1966: 18).

Soon after the Planning Department had begun its urban renewal activities, it was recognized that planning activity was limited to the physical and economic conditions of the City of New Westminster, and that planning had to take place on a more regional context. As a result, in 1975, the Greater Vancouver Regional District (GVRD) published the
"Livable Region Plan", which was aimed at rationalizing development of the Greater Vancouver area (City of New Westminster, 1987: 3). One of the Plan's strategies was the development of "Regional Town Centres" which would:

"...bring jobs, shopping and cultural opportunities closer to where people live. Decentralization to the centres of some of the office growth that otherwise will locate in Downtown Vancouver, will generally reduce transportation problems. The aim therefore, is to create urban spaces which are attractive alternatives to Downtown".

(GVRD, 1975: 10).

With the approval of the City of New Westminster, the GVRD selected New Westminster as its first priority in the development of the "Regional Town Centre" concept. In 1977, the GVRD and the City of New Westminster published a document titled "A Regional Town Centre for New Westminster - Action Plan Report", which stated that while the City had the potential for development, competition from newer centres would require New Westminster to implement special techniques in order to flourish as a town centre (Joint Review Committee, GVRD & City of New Westminster, 1977: 4-7).

One of the policy statements in this plan was "the opening-up of the Downtown to the river". The plan described New Westminster's waterfront as a "major opportunity for public action" (Joint Review Committee, GVRD & City of New Westminster, 1977: 10). The report also argued that a revitalized waterfront would provide the catalyst necessary to begin the development of a New Westminster Regional Town Centre.

As a result, in 1978, a partnership named the First Capital City Development Company Limited (FCC) was formed between the City and the British Columbia Development Corporation, to guide the redevelopment of downtown New Westminster (City of New Westminster, 1987: 3). At that time, a community plan for the downtown was written, to provide the formal strategy and policy framework. Part of the FCC agenda included the revitalization of the waterfront area, to replace the historic Westcoast Terminals and industrial activities which previously inhabited the waterfront with 1200 units of housing, an office building (First Capital Place) and a 70,000 square foot public market (Westminster Quay Public Market). As well, the Esplanade boardwalk, a 2,000 lineal foot, 30-100 foot
Figure 5.5 Westminster Quay: First Capital Place and the Inn at the Quay hotel. The Esplanade parallels the waterfront for the entire length of Westminster Quay. At the right, is the market, in front of which observations were recorded.
wide linear open space, which parallels the entire water's edge of downtown New Westminster, was constructed. Policy statements in the Downtown Community Plan and the Official Community Plan provided the policy directives establishing the Esplanade and public access to the New Westminster waterfront.

Over time, FCC acquired most of the lands along the central waterfront. In the early 1980's, they rezoned and subdivided the site to accommodate residential, commercial and open space uses. A portion of the FCC Concept Plan is shown in Figure 5.5. In the early 1980's, FCC marketed the various newly created development parcels using a competitive bid tendering process (Schieving, 1991). As developers developed the residential parcels to the west of the market place along Quayside Drive, the Esplanade was constructed, in piecemeal fashion. Discussions with the New Westminster Planning Department and the Hulbert Group (the architects who worked on the physical site planning) uncovered that there were no written municipal guidelines regarding how the Esplanade should be designed, but that FCC may have implemented private design guidelines for the residential development, as an agreement of sale using a registered building scheme (ie. a contractual agreement between FCC and the numerous builders/developers).

By 1986, much of this development was completed, and more housing units began construction to the west of Westminster Quay (and are still currently developing). The extension of SkyTrain from Vancouver to New Westminster in 1986 provided a strong catalyst for much of the redevelopment which occurred in the waterfront area.

5.4 Transportation and Access

The circulation system at Westminster Quay is comprised of five components: gateways, the road network, pedestrian and bike path networks, parking and public transit access (as illustrated in figures 5.3, 5.4 and 5.6 ). When the Westminster Quay development concept was first planned, a decision was made by FCC to separate automobiles from the pedestrians and provide pedestrians with exclusive access to the water's edge (McLaine, 1991).
5.4.1 **Gateways**

The rail yards present a barrier, which limits pedestrian and automobile access to Westminster Quay. To cross this barrier, at-grade and elevated crossings of the railway have been built. These crossings also provide gateway accesses into the Westminster Quay residential neighbourhood. The most pronounced of these gateways are the pedestrian bridge at the foot of Eighth Street, and the at-grade road crossing at the foot of Begbie Street.

The pedestrian bridge connects pedestrians between Hyack Square, a small urban park at the foot of Eighth Street and flanking Columbia Street (in the heart of the Downtown District), and the market at Westminster Quay. Although this bridge provides an effective gateway to the Quay for agile pedestrians on foot, it has too many stairs and no ramps to accommodate seniors, the physically challenged, adults with children in strollers and bicycle riders.

The Begbie Street at-grade crossing allows quick access for automobiles between the Downtown District and a large surface parking area adjacent to the market on the vacant New Westminster Pier. This crossing also connects to Samson Drive which later connects to Quayside Drive and Old Columbia Street, all of which serve as the loop road servicing the Quay residential neighbourhood. The frequency of trains passing through the crossing is approximately one train every hour, which causes some delays to traffic.

A street light has recently been installed at the intersection of Begbie and Front Streets, to relieve congestion and accidents at this previously three-way stop intersection. The street light has resulted in some congestion forming during weekend peak hours, which causes automobiles to be backed-up into the surface parking area on the south side of the tracks, and as far up as Columbia Street, on the north side of the tracks. There is no sidewalk at this crossing to accommodate pedestrians. However, since the pedestrian bridge is not accessible for seniors, the physically challenged, adults with children in strollers and bicycle riders, these people can often be seen crossing the tracks, amongst the cars, at the Begbie Street crossing.
Figure 5.3 Westminster Quay: Pedestrian Overpass of railway; the gateway to Westminster Quay.

Figure 5.4 Westminster Quay: Parking lot on the old Westminster Pier.
Other crossings, primarily for automobiles, but which also have sidewalks, are located at McInnes Street and at Third Avenue. These crossings provide quick automobile access into the Westminster Quay residential neighbourhood, away from the traffic created by the market and the Downtown District.

5.4.2 The Road Network

As discussed above, the road network is separated from the water's edge and the pedestrian paths (as shown in Figure 5.6). The only interface between cars and pedestrians takes place at street-end cul-de-sacs located at Kdek Court and Reliance Court. Small urban parks comprised of a dedicated strip of land landscaped on the sides and paved with brick pavers connect the street with the waterfront Esplanade. Automobile access beyond the cul-de-sacs is restricted by the use of knock-down bollards (which can be removed for emergency or servicing access).

The road network acts as a loop which crosses the railway at three access points (two elevated crossings and one at-grade crossing) and passes through the centre and the north side of the Westminster Quay and Renaissance Square neighbourhoods, via Quayside Drive.

In response to the need for an at-grade pedestrian crossing of the railway tracks near the public market, Larco Development, the current owner and manager of the market, has submitted a proposal to the City to reopen Eighth Street, and have it pass through Hyack Square, across Front Street and across the railway tracks, to terminate in a shared automobile and pedestrian turn-a-round in front of the market. From this turn-a-round, underground parking areas to accommodate the market and private roads to access the proposed residential developments along the New Westminster Pier would be accessed. In addition, the at-grade crossing at Begbie Street would be closed to both cars and pedestrians. The General Manager of the Westminster Quay Market informs that the Canadian Pacific Railway finds this proposal acceptable. Negotiations and legal arrangements to accommodate the proposal are currently underway.
Figure 5.6 Major Roads, Transit and Bus Routes.

(Taken from City of New Westminster, 1987)
5.4.3 Pedestrian and Bike Path Networks

At Westminster Quay, the entire water's edge has been dedicated to the public for access by pedestrians. As a result of redevelopment, a strip of land varying from 30 feet (10 metres) to 100 feet (30 metres) in width, paralleling the foreshore, has been dedicated as park for public use. This public waterfront pathway, called the "Esplanade", extends the entire distance from the eastern edge of the market to the western edge of Renaissance Square, for a total of approximately 2000 lineal feet. The City has plans to extend the Esplanade to the east, along the edge of the New Westminster Pier, as residential developments occur in the future, and; to the west, as waterfront properties located between Renaissance Square and the Queensborough Bridge, which currently accommodate industrial uses, rezone and redevelop to other uses.

The Esplanade serves as the backbone of the pedestrian circulation system. Adjacent to the residential neighbourhoods, it consists of three components: a wooden boardwalk of 10 feet in width (on average), a landscape buffer of 5 feet width (on average) and a brick paved path of 20 feet in width.

In the residential areas of Westminster Quay, the boardwalk is for the exclusive use of pedestrians on-foot. The brick paved path is for the use of pedestrians and cyclists. The landscaped buffer, located between the boardwalk and the brick paved path, provides a transition and separation between the pedestrian only boardwalk and the brick paved area for pedestrians and cyclists. Beyond the brick paved area, is a narrow strip of grass, then a 20 foot landscaped area which buffers the Esplanade from the edge of the residential low-rise development (as shown in Figure 5.9).

In front of the First Capital Place office building, the hotel and the market, the wooden boardwalk, which widens to 20 feet in width, is for the use of pedestrians and cyclists. The brick paved path does not exist here. In front of the market, there is a small plaza, surfaced with exposed aggregate and brick, which provides pedestrian access between the market and the boardwalk (as shown in Figures 5.7, 5.20 and 5.21).

At the street ends cul-de-sacs of Kdek Court and Reliance Court (in the waterfront residential neighbourhoods), there are interfaces between the street and the pedestrian/bicycle path portion of the Esplanade. At these portions of the Esplanade,
Figure 5.7 Westminster Quay: Open Space and Esplanade can be seen in front of the market, at the water's edge.
boardwalk protrudes out over the river by an extra 60-80 feet, giving the sense that the street continues out over the river, but not for cars; only for pedestrians. The combination of the street ends and the widened Esplanade create small urban parks where a focus of pedestrian activities takes place. The street end connections to the Esplanade allow glimpses of the river from the road network through the pedestrian realm.

There are also occasional pedestrian connections to the Esplanade through the centre of the low-rise residential buildings. Although these paths are for public use, they appear to be for private use by residents living here, since they pass very closely through the centre of the residential buildings.

There are sidewalks located parallel to the road on the McInnes and Third Avenue elevated crossings of the railway tracks, which provide pedestrian access to the Westminster Quay and Renaissance Square neighbourhoods. However, because these crossings have steep grades and cause travel in a round-about way, they are not widely used by pedestrians and cyclists. Pedestrian and cyclists activities are focused on the Esplanade.

The Esplanade allows residents of Westminster Quay and Renaissance Square to walk or ride bicycles to the market and Downtown District. At the current time, the Esplanade terminates at the western edge of Renaissance Square. Pedestrians must either continue along the road network (Quayside Drive) or turn around and double-back on the Esplanade. In most cases, pedestrians choose the latter.

Studies conducted by the market management found that many people drive their cars to the site and park in the surface parking lots on New Westminster Pier (which are supposed to be exclusively for market users) and then go for walks along the Esplanade, without ever entering the market.

As discussed in the previous section, a pedestrian bridge over the railway tracks, at the foot of Eighth Street connects pedestrians between the Downtown District and the market and waterfront. However, because the bridge has many stairs and no ramps, seniors, physically challenged people, adults pushing children in strollers and cyclists cannot use the bridge. These people must use the at-grade Begbie Street railway crossing to access the site, alongside the cars.
Figure 5.9 Westminster Quay; Aerial View showing Esplanade on right along shoreline and First Capital Place, Inn at the Quay and the Market on the top right.
5.4.4 Parking

There are numerous off-street parking opportunities located in the Westminster Quay area. Directly to the east of the market, a large surface parking area located on the vacant New Westminster Pier can accommodate approximately 400 cars. This parking lot is intended for market users and has a three hour maximum time limit to restrict SkyTrain commuters from using the lot as a park-and-ride facility. During evenings, a fee is incurred for parking in this lot to reduce security risks resulting from patrons of adjacent cabarets on Front Street. Prior to the market implementing an evening parking fee, cabaret patrons used the parking lot as a hang-out.

To the north of the surface parking area, on the north side of the railway tracks, is the Front Street (above ground) Parkade. This pay parking lot accommodates approximately 756 spaces.

On the west side of the market are surface and underground parking lots which accommodate the market, hotel (the Inn at the Quay) and office building (First Capital Place) located at Westminster Quay. The first two hours of parking is free in these lots. After two hours a fee is incurred.

The residential portions of Westminster Quay and Renaissance Square provide underground off-street parking for residents and guests as per the requirements specified in the City of New Westminster Zoning Bylaw No. 1743 (primarily 1.2 spaces for each one-bedroom dwelling unit and 1.5 spaces for each two-bedroom dwelling unit). In order to reduce traffic congestion and get parked cars off the street, street parking has been reduced to a minimum in the Westminster Quay area.

Beyond the bounds of the Westminster Quay neighbourhood, there are approximately 6,300 parking spaces in the entire Downtown District, of which 5,026 are off-street and 1,261 are street parking (City of New Westminster, 1987: 9).
5.4.5 Public Transit Access

Although there are no public transit routes which pass through Westminster Quay, there is a regional bus/SkyTrain station (called New Westminster Station) on the north side of the pedestrian bridge, near the intersection of Eighth Street and Columbia Street. From this station, buses travel to Burnaby, Vancouver, Delta, Surrey, Coquitlam, Port Coquitlam, Ioco and the Vancouver International Airport (Figure 5.6 on page 49 illustrates the bus routes passing through the New Westminster Downtown District), (B.C. Transit, 1993). This station serves as an important regional transportation interchange point (City of New Westminster, 1987: 8).

The SkyTrain automated light rail rapid transit service, provides quick and easy transit connections between Surrey, New Westminster, Burnaby and Vancouver.

Local bus routes and stops are located along Columbia Street, Eighth Street and Sixth Street.

5.4.6 Regional Transportation Linkages to Westminster Quay

Beyond the bounds of Westminster Quay, a series of arterial roads and highways provide access to New Westminster and the Quay.

The streets which pass through Westminster Quay can be accessed from Columbia Street, an arterial road which travels in an east-west fashion through the core of the Downtown District. Figure 5.6 shows the context of these streets to the site. At its western edge, Columbia Street turns into Stewardson Way, which provides access to the Queensborough Bridge, Alex Fraser Bridge, Surrey, North Delta, and East Richmond. Stewardson Way also provides access to Marine Way which connects with South Burnaby and South Vancouver.

Traveling east on Columbia Street, the Pattullo Bridge provides access, via the King George Highway, to Surrey City Centre, and points beyond to the south (such as the Canadian/United States border crossing). Traveling further east on Columbia Street, Trans Canada Highway #1, provides access to Surrey, Langley and points beyond (to the southeast) and to Burnaby, Vancouver and the North Shore (to the northwest). At its northeastern edge, Columbia Street becomes North Road as it crosses the Coquitlam
municipal boundary. North Road provides access to the Loughheed Highway, Port Moody, and Coquitlam.

5.5 Land Use and Zoning

The Westminster Quay site is zoned C-4, "Central Business District", which allows various uses including (but not restricted to) retail, office, general and personal services, wholesaling, marinas and numerous forms of residential development (single family dwelling, duplex, townhouse, and medium and high rise apartments). The maximum permitted floor space ratio for the site is 5.2 and the maximum allowable heights are 120 feet for the market and 220 feet for the second phase of offices proposed to be built on the north portion of the First Capital Place office development. In this case, the market site is grossly underdeveloped. There are plans by the current market owners to develop the parking lots to the east of the market with high rise apartments and to expand the market building to the east to include a "Fraser River Discovery Centre".

To the northeast of the site, the majority of the Downtown District is also zoned C-4 (Central Business District) and is developed with four to six storey buildings containing a mixture of various commercial uses. To the west of the site, on either side of Quayside Drive is a residential district zoned RM-6, Multiple Dwelling District (Downtown). On the south side of Quayside Drive, medium-rise buildings of up to 90 feet in height are permitted, while on the north side of Quayside Drive, high-rise buildings up to 170 feet are allowed. No commercial uses are permitted in this district. Figure 5.11 on page 60 shows the location of these different land uses.

To the northeast of the site and beyond the RM-6 residential neighbourhoods, there are M-1, Light Industrial Districts on the north side of the SkyTrain alignment and M-2, Heavy Industrial Districts along the river's edge.

5.6 Policy Context

Various policies guided the development of Westminster Quay. Most of these policies are still in place today. The majority of these policies are municipal, however, there are also some federal and provincial polices. As mentioned earlier in this chapter in the history section (5.3), redevelopment of New Westminster's waterfront was initiated by a joint
venture between the City and the British Columbia Development Corporation (a provincial crown corporation). This joint venture was called the First Capital City Development Corporation (FCC). FCC was largely responsible for initiating the policies specified in the Community Plan for Downtown New Westminster, the document which provided the blueprint for redevelopment of the New Westminster waterfront. In 1979, the New Westminster Redevelopment Act was ratified by the Legislature of B.C., which established the enabling legislation for FCC to operate and defined the development review process for development proposals in the downtown area.

5.6.1 Municipal Policies

The municipal policies which regulate waterfront redevelopment in New Westminster include the Zoning Bylaw, Official Community Plan for the City of New Westminster, and Community Plan for Downtown New Westminster.

The Zoning Bylaw regulates the height, density, siting and use of buildings. The implications of the Zoning Bylaw on the case study site were examined in the previous section (5.5) regarding land use and zoning. Although the bylaw provides minimum usable open space requirements for residential developments (minimum of 25% of site area shall be for open space), it does not make reference to where this open space should be located or any special reference for lots near the waterfront.

The Official Community Plan for the City of New Westminster provides very general statements regarding, waterfront revitalization, open space and public access and linkages to the waterfront. The following are selected policy statements taken from the plan, which make reference to these issues:

"A series of small parks and public open spaces should be created and developed along the waterfront areas as part of the waterfront redevelopment process." p. 27

"A pedestrian circulation system, separate from the road system, should be considered in areas of high pedestrian movement and activity such as at the waterfront..." p.29

"The waterfront should be developed as a public promenade, with access provided through the ends of public streets, small parks and easements from adjacent developments." p. 30

"Provide parks... based upon population requirements and in accordance with accepted contemporary standards." p. 11
"Encourage new and alternative uses of vacant, under-developed and derelict land."  p.13

"Promote the revitalization of the port and waterfront areas by encouraging imaginative uses and alternative proposals."  p. 12

"Protect views, encourage creative innovative architecture and provide extensive landscaping and imaginative street, plaza and open space treatments."  p. 13

"Medium and high density housing should be encouraged along the waterfront."  p. 21

"Commercial development should be integrated with the waterfront."  p.23

"All major building projects should be required to street or boulevard trees as part of the design approval process in all rezoning, subdivision and development permit applications."  p.33

(City of New Westminster, 1982)

These policies provide a framework for waterfront redevelopment and for public open space at, and access to the water's edge. However, they do little to define how such spaces should be designed or what form they should take. In much the same fashion, the Community Plan for Downtown New Westminster provides various policies regarding public access and the development of derelict industrial property. The following are selected policy statements extracted from the Community Plan:

"To develop public access to the Fraser River waterfront at various points including a public Esplanade along the full length of the waterfront within the area."  p. 5

"To promote viable and positive alternative uses for vacant, underdeveloped and derelict property."  p.5

"To develop viable and positive alternative uses for the City's port and waterfront."  p. 5

(City of New Westminster, 1987)

In addition, Section 10, "Public Open Space", of the Community Plan explains:

"...A thirty foot wide park strip of over 2,000 lineal feet will be created along the Fraser River waterfront and will be dedicated for public use as each project is completed. All citizens will have access to the waterfront and public open space will not merely be protected but will be created."  p.10

(City of New Westminster, 1987)
Figure 5.11 Westminster Quay; Adjacent land uses (as per the Downtown Community Plan).

(Taken from City of New Westminster, 1987)
Figure 5.12 *New Westminster Downtown District Character Areas for Signs.*

*(Taken from City of New Westminster, 1987)*
Unfortunately, the document does not give any indication or guidelines on how this waterfront public open space will be created, but simply states it "will be created". Discussions with the New Westminster Planning Department indicated that there were no formal City policies implemented regarding the actual design of the waterfront Esplanade and open space paralleling the New Westminster waterfront. Discussions with some of the designers also indicate that although there were privately regulated (by the parcel developers) design guidelines for the buildings, there were no such guidelines for the design of the waterfront open space.

5.6.2 Senior Government Policies

In addition to the municipal policies, there are also provincial and federal policies which govern development along the foreshore of the Fraser River. These policies are administered by the following federal and provincial agencies:

- Fisheries and Oceans Canada
- Environment Canada
- Public Works Canada
- Fraser River Harbour Commission
- Steveston Harbour Authority
- North Fraser Harbour Commission
- B.C. Ministry of Environment
- B.C. Ministry of Lands, Parks and Housing
- Regional Districts.

In order to streamline the development review process and ensure consistency of policies among these agencies, the Fraser Estuary Management Program (FREMP) was initiated in 1980. FREMP acts as an umbrella organization which facilitates a "linked management system" for the Fraser River estuary to ensure that an appropriate environmental review process is undertaken for all development proposals along the shores of the Fraser estuary (Fraser River Estuary Study, 1980: 8).
In the 1980 summary report, *A Living River by the Door*, which was jointly authored by the Fraser River Estuary Study (the precursor to FREMP), and the federal and provincial governments, the framework for FREMP was established. In this report, the following policies regarding recreation goals and development were stated:

"Planning: ...to link waterfront sites and upland recreation systems..."

"Development: ...to incorporate recreational opportunities, where feasible, into urban-industrial developments along the foreshore..."

(Fraser River Estuary Study, 1980: 7).

Part of the FREMP review process involves ensuring conformance to B.C. Ministry of the Environment flood proofing standards for the Fraser River. In most cases, to accomplish flood proofing requires either land filling or the construction of dykes.

One of the functions of FREMP is to bring together representatives of the agencies listed above to sit on sub-committees which examine specific issues such as the habitat, port and industrial land supply/demand and development strategies and recreation plans. These sub-committees produce reports which include policy recommendations to better manage development within the estuary, while keeping in mind environmental protection and conservation.

In a FREMP report entitled, *Report of the Habitat Activity Working Group*, a map identifies the downtown New Westminster waterfront as being of low value shoreline habitat, due to its industrial history, and current residential uses (FREMP, 1991: 47). The same report mentions that an intertidal bench was successfully incorporated into a dyke constructed along the New Westminster waterfront as redevelopment occurred. In 1988, this bench was planted with intertidal marsh vegetation (FREMP, 1991: 27). FREMP calls this technique "habitat compensation".
Figure 5.13 FREMP New Westminster Recreation Unit Map
In another FREMP report entitled, Proposed Recreation Plan, the New Westminster waterfront is described as a recreation unit, as shown in Figure 5.13. The report quotes:

"the heavily developed shoreline of New Westminster is undergoing a transformation from industrial to residential and other uses, with public access to the waterfront as a key feature of the redevelopment. Historically, New Westminster has had its back to the river. Today it is in the process of turning around to face the main arm, where the river is considered a feature attraction. There are a variety of public places, including the Market area, where the river is featured..."

(FREMP, 1990: 90-91).

5.7 Demographic Profile

In order to obtain an understanding of the demographic characteristics in the vicinity of Westminster Quay, 1986 Statistics Canada census data were abstracted for enumeration areas within a 500 metre radius of the site. 1986 Census data were used because at the time of the research, and currently, the more recent 1991 census data have not been readily available for enumeration areas. It is important to realize that since much of the development in the vicinity of Westminster Quay occurred in the period from 1984 to 1986, the 1986 census data numbers have most likely increased. However, the purpose of this profile is to provide a glimpse of the demographic context in the vicinity of Westminster Quay.

From the Statistics Canada data, the following profile was defined:

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<th>Total Population</th>
<th>890</th>
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<tr>
<td>Males</td>
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<tr>
<td>Females</td>
<td>390</td>
</tr>
<tr>
<td>Occupied Private Dwellings</td>
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<tr>
<td>Single Detached Houses</td>
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<tr>
<td>Non-Family Households</td>
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<tr>
<td>Total # of Families</td>
<td>210</td>
</tr>
<tr>
<td>Ave. # of Children/Household</td>
<td>0.65</td>
</tr>
</tbody>
</table>

(Statistics Canada, 1987).
From these data, although the total population was about half that of Steveston Landing in 1986 (which was 2,110), it is apparent that there is a critical mass of residential population living in the vicinity of Westminster Quay. It is interesting to note that in 1986, there were more males than females (56% males and 44% females). Of the 535 occupied private dwellings, only about 39% were occupied by families. This is much lower than the numbers of families in the vicinity of Steveston Landing (which will be reviewed in the following chapter). The average number of people per household (being 1.73) and the small average number of children per household (being 0.65) reinforce the fact that there are few families and suggests that the neighbourhoods are dominantly occupied by singles and couples. Of the 210 families, 45 (or 21%) were single parent families, which is in keeping with the low average numbers of people per household.

Only about 9% of the households were located within single detached dwellings, which is consistent with the fact that the housing stock is primarily denser multiple low-rise and high-rise dwellings. The number of people living in multiple dwellings has probably increased since 1986, with the construction of recent residential buildings in the vicinity of Westminster Quay.

From these data, it is important to recognize that there is a critical mass of people living in the vicinity of Westminster Quay, most of whom are singles or couples, but some families, and almost all of which live in multiple dwellings. This resident population represents a potential user group who live close to Westminster Quay and may even walk or ride a bicycle to access the Quay. These topics will be analyzed in the next section which examines survey data collected at Westminster Quay, in order to determine the origins of people attending Westminster Quay.

### 5.8 User Profile

Using the method described in section 4.8 of the previous chapter, survey questionnaires were circulated to a random sample of people using the open space at Westminster Quay, on a weekend afternoon in July, 1993. Approximately thirty people responded to the survey. The following section summarizes the results of the responses.

Figure 5.15 demonstrates the responses to question one, which asked how far people had traveled to get to Westminster Quay. Overwhelmingly, the data displayed that 82% of the respondents traveled between 5 and 30 miles to get to the site. Of this number, 47%
traveled from 5 to 10 miles and 35% traveled 11 to 30 miles (for a total of 47%). These data suggest that the majority of the people attending Westminster Quay live beyond walking distance from the site. This observation is further proven by the results of question two, which show that only 17% of the respondents reside in the municipality of New Westminster. These respondents also accounted for the 18% who traveled less than 2 miles to get to the site. An interesting trend identified was that many of the people attending Westminster Quay, reside in municipalities which abut New Westminster, primarily, Coquitlam (where 18% resided), Surrey (where 18% resided), Burnaby (where 6% resided) and Delta (where 6% resided). Other noticeable origins were Langley (where 18% resided) and Vancouver (where 17% resided).

To determine how these people traveled to the site, the results of question three (as shown in Figure 5.16) show that the majority, 52%, drove automobiles and 6% rode motorbikes to get to Westminster Quay. None of the respondents had taken a bus, however, 12% used SkyTrain to access the site from other municipalities. In like manner, little or no people had taken a bus to get to Steveston. Unlike Westminster Quay, Steveston does not have a rapid transit station nearby. In total, 30% had used pedestrian means to travel to Westminster Quay. Of this number, 18% had walked and 12% had bicycled (for a total of 30%). The majority of these respondents were the same people who lived less than 2 miles away from the site. Some of the bicyclists had come from nearby Burnaby as well. As will be seen in the next chapter, this 30% is smaller than the 42% of respondents at Steveston Landing, who had bicycled or walked to the site.

Question four asked what the purpose was for coming to the Westminster Quay. The responses to this question can be seen in Figure 5.19. Respondents were able to provide multiple answers to this question, since there may have been numerous purposes for their trip. From Figure 5.19, three purposes appeared to stand out. The most popular purposes were to eat (47%), to exercise (47%), to entertain children (35%), to view the river (35%) and to relax (29%). The next group of moderately frequent purposes were to meet friends (18%), to shop (18%) and to walk dogs (12%). The least frequent purposes were to watch people (6%) and to entertain friends (6%). Nobody at Westminster Quay replied that to see the fish was a purpose, most likely because Westminster Quay does not have a Public Fish Sales Dock, as does Steveston Landing.
Westminster Quay
Demographic Profile of Respondents

Age Group

<table>
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<th>Frequency</th>
<th>0 to 15</th>
<th>16 to 25</th>
<th>26 to 35</th>
<th>36 to 45</th>
<th>46 to 55</th>
<th>56 to 65</th>
<th>66 to 75</th>
<th>75 and Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Figure 5.14
Westminster Quay
Distance Travelled From Residence
(In Miles)

Figure 5.15
Westminster Quay
Mode of Transportation
Used to Travel to Site

![Bar chart showing the mode of transportation used to travel to the site. The highest frequency is for Automobile, followed by Walked, then SkyTrain, Bicycle, and Bus.](Image)

Figure 5.16
Westminster Quay
Municipality of Residence

Figure 5.17
It was clearly apparent that almost half of all respondents identified eating (47% of respondents) and to exercise (47% of respondents) as reasons for visiting the Quay. This information is consistent with the activity data (to follow) which show walking on the boardwalk and sitting in the plaza, next to the public market where food can be purchased, and sitting on the secondary planter ledge benches, which parallel the boardwalk and view out to the river, were very popular activities. Many of these people sitting were usually eating food as well.

Viewing the river was a purpose for 35% of the respondents. From the activity observations, it was noted that many of the people sitting in the plaza, would adjust their chairs to orient their views towards the river. People would also lean on the rail at the edge of the boardwalk, with their views to the river. Of the respondents, 29% reported that relaxing was a purpose for visiting the Quay. This purpose is consistent with the large numbers of people sitting and the purpose of viewing the river.

Entertaining children was also a popular purpose at Westminster Quay for 35% of the respondents. This activity is largely due to the "Expo Tugger" playground.

Although the public market is directly adjacent to the waterfront open space at Westminster Quay, only 18% of those interviewed saw shopping as a reason for coming to the Quay. This would suggest that the people who use the open space are not the same people who use the market for their everyday shopping. Field observations noted that market shoppers often walked from their car to the market, shopped, then walked back to their cars, with bags in hand, without ever walking on or near the boardwalk. The frequency of this activity is included in the walking in the plaza data in following sections. As reflected by the high frequency of eating as a purpose, field observations confirmed that most people coming out of the market to enter and use the open space were not carrying bags, but were eating or drinking food and beverages.

Although there were not many people watchers (only about 6%), 18% found meeting friends and 6% found entertaining friends to be reasons for coming to the Quay. Of these people, many mentioned they enjoyed bringing tourists, friends and family to Westminster Quay to see the Fraser River, have something to eat, exercise and then relax.
Figure 5.18

Frequency

%  0  5%  10%  15%  20%  25%

1st Time

Once in 5 Years

Once in 3 Years

Once in 1 Year

1 to 5 Times a Year

6 to 10 Times a Year

11 to 24 Times a Year

25 to 49 Times a Year

50 to 99 Times a Year

100 or More Times a Year

Westminster Quay

Number of Trips to Site
There were also some dog walkers at Westminster Quay. 12% of the respondents included people who were taking their dogs for a walk along the Esplanade boardwalk. Many of these people were part of the 18% who had walked and traveled less than 2 miles to get to the site. Some had driven to the site from other municipalities to have lunch or an ice cream cone and take the dog for a walk along the boardwalk. From the purpose data, clusters of numerous purposes rather than a single purpose explained why people had attended the open space at Westminster Quay.

With regard to question four, which enquired about the frequency of trips to Westminster Quay, it was found that very few people traveled to the site more than 50 times in a year. The majority of the respondents either attended the site 1 to 5 times a year (as represented by 23%) or 11 to 24 times a year (as also represented by 23%). This is consistent with the municipality of residence and distance traveled data which identified that most people had come to the site from neighbouring municipalities. There were almost equal numbers of people who had come to the site 6 to 10 times a year and once in every 5 years (with each one having about 19% frequency).

As respondents were interviewed, their approximate age and sex were noted. As a result, it was determined that the majority (42%) of the respondents were between the ages of 26 and 35. Of these people, 32% were females and 10% were males (for a total of 42%). The remainder of the respondents were seniors over 66 years of age (as represented by 19% who were between 66 and 75 years and 23% who were over 75 years). Almost all of the people 66 to 75 years of age were females while the majority of the people 75 years or older were males. There were limited numbers of people aged 56 to 65 and almost nobody between the ages of 36 to 45 years, as demonstrated in Figure 5.14. There were very few young adults between the ages of 19 and 25. Also, although children were present at the site, they were not interviewed for the reason that they were usually with a parent or grandparent who provided responses on their behalf. Children may not have been able to provide comprehensive answers to the questions asked.
(Multiple Responses per Respondent)

Purpose for Trip to Site

Westminster Quay

Figure 5.19
From the user survey questionnaire results, the following items were found to play an important role in urban waterfront public open space:

- Opportunities to view the river
- Attractions for children such as playgrounds
- Opportunities to purchase food
- Opportunities to sit or stand and relax or eat food
- Opportunities to sit
- Opportunities to walk and exercise, such as boardwalks
- Good automobile access and adequate parking facilities
- Good pedestrian access and linkages to nearby residential and commercial areas
- Pedestrian linkages to nearby public transit stops.
- Places to meet and entertain friends.
- Places to walk dogs

The next section analyses how the open space is physically designed at Westminster Quay and reviews the activity data obtained through on-site participant observations.

5.9 Physical Description of Design Elements at the Water's Edge

In order to be consistent in the case studies, the thesis examines the design, human behaviour and groupings of people only in the open space areas directly adjacent to the commercial/retail market components of the case study areas.

At Westminster Quay, the open space directly adjacent to the market is comprised of two major components which parallel the water's edge: the Boardwalk and the Plaza (as shown in Figures 5.20, 5.21, and 5.22). Within each of these two realms, numerous design elements define the space and impacts how it is used.

5.9.1 Boardwalk

A boardwalk is located directly above the water's edge, parallel to the river. This boardwalk forms a part of the greater Esplanade which spans most of the distance of the New Westminster waterfront, and provides pedestrian access to the residential areas of Westminster Quay and Renaissance Square, to the west.
Figure 5.20 Westminster Quay: The public open space

Figure 5.21 Westminster Quay: Relationship between market, boardwalk, plaza and waterfront.
The boardwalk is 20 feet (6.56 metres) wide on average. At some points, such as near the entry plaza and parking lot for the market (to the east) and near the main southern entry to the market, the boardwalk widens to up to 50 feet (16.40 metres) (as shown in Figure 5.20). Where the boardwalk widens, it extends further out over the water's edge. Directly beneath the boardwalk, the foreshore is built-up with rip-rap consisting of medium-sized (10 inch diameter) rock. Only at low tide can the rip-rap be seen from the boardwalk. The remainder of the time, the boardwalk hangs over the water, giving people a sense of being on the water.

The boardwalk is constructed of 12 inch (30.48 cm) wooden boards laying perpendicular to the water's edge, in much the same fashion as many piers. As people walk along the boardwalk, you can hear each footstep on the wood. Every 50 feet (16.40 metres) or so, large bronze coins have been glued onto the surface of the wood, for architectural interest. It is quite humorous to watch how many people try to pick these coins up, then realize they are securely glued to the boardwalk.

The boardwalk is bounded on the waterfront side by a railing and on the market side by a linear concrete ledge and landscape planter which separates the plaza from the boardwalk. There is no primary seating (benches, etc.) located on the boardwalk. As a result, most activities occurring on the boardwalk, such as walking, jogging, walking a dog, bicycling, or wheelchairing, are active rather than passive. Some passive activities also take place, such as standing and leaning on the rail at the edge of the boardwalk. Many people use the ledge of the planter which separates the boardwalk from the plaza, as a place to sit and enjoy the view or eat food.

Although the boardwalk forms part of the greater Esplanade, and is owned by the City of New Westminster (ie. the public), the managers of the market perform daily maintenance of the boardwalk, such as garbage collection and security.
Figure 5.22 Westminster Quay: Plan view of public open space.
Figure 5.24 Westminster Quay: The Boardwalk.

Figure 5.25 Westminster Quay: Activities on the Boardwalk.
5.9.2 Plaza

A plaza area is located between the boardwalk and the market. This plaza serves the dual purposes of providing access from the boardwalk/Esplanade to the market and providing market users with a place to sit, relax and enjoy the waterfront river view, eat, drink coffee or watch entertainment (when it is programmed).

The plaza is elevated by three steps from the boardwalk, which results in a difference in height of approximately 18 inches (45 cm). This difference along with the landscaped planter (which separates the plaza from the boardwalk) creates a noticeable transition between the plaza and the boardwalk. Since most of the plaza users were often eating food, it would appear as though they from inside the market. There were usually very few people sitting or standing in the plaza who were not eating food. This would suggest that people get a sense that the plaza is for market users, while the boardwalk, is for the general public.

Most of the activities taking place in the plaza were passive, such as sitting, eating food, sun tanning or watching views of the river and people on the boardwalk. People love to watch people. Since the plaza is elevated, it provides an excellent opportunity for people watching.

The plaza surface materials consist of exposed aggregate bounded by brick pavers. Both have a grey colour. Between the market and the boardwalk, the plaza is triangular in shape and ranges in width from 15 feet (4.92 metres) to 40 feet (13.12 metres) (as shown in Figures 5.22, 5.26 and 5.27).

The plaza is filled with many primary seating opportunities. There are both movable and fixed chairs and tables, to accommodate market users for the most part. One gets the sense of being in a streetside bistro cafe in the plaza area. The plaza is not publicly owned but is owned and maintained by the managers of the market.

The plaza extends around the east side of the market, to act as the gateway and main entrance to the market. This portion of the plaza is used most frequently by people walking to and from the parking and the market. At the edge of this entry plaza, there are a few decorative concrete bollards which separate cars from the plaza and house ground lighting. Occasionally, people use these bollards as a place to sit.
Figure 5.23 Westminster Quay: Cross-section view of public open space.
Figure 5.26

Westminster Quay: Integration and transition of boardwalk and plaza.

Figure 5.27 Westminster Quay: Pavement of plaza.
Within the plaza between the boardwalk and market, and the entry plaza, there are various sculptures and public art, which create thematic visual interest and provide secondary seating opportunities.

5.9.3 Railing

At the river side of the boardwalk, running parallel to the boardwalk, is a continuous metal rail, which keeps people from falling into the water. The rail is painted with white cross pieces and powder blue posts, which enhances a nautical theme. Every 20 feet (6.56 metres) along the rail, there is a lamp standard, also painted in the white and powder blue nautical colours. Hanging planters, in pairs, hang from some of the lamp posts.

A popular activity on the boardwalk is to lean on the rail and watch the river activity. The rail is the closest people can get to the water. They cannot touch the water, but they can feel close to the water.

5.9.4 Seating

There is no primary seating located on the boardwalk. However, the ledge of the planter which separates the boardwalk from the plaza provides excellent secondary seating. The observation results, which are examined in the next section, discovered that sitting on this ledge is the most popular activity at Westminster Quay. Occasionally, some people could be seen sitting on the floor of the boardwalk, next to the rail, which is the closest seating to the water.

On the other hand, there is a considerable amount of primary seating but little secondary seating, located in the plaza, as shown in Figures 5.30 and 5.31. Of these primary seats, there are both fixed and movable seating. The fixed seating consists of two large picnic tables and benches.

The remainder of the seating is movable and consists of round bistro tables and umbrellas, with four chairs per table. The coffee and yogurt shops often put extra chairs out, which people move around all over the plaza. On some days, these chairs can even be seen on the boardwalk. There are no distinct patterns of the movable tables and chairs. Each day, they
Figure 5.30 Westminster Quay: Primary fixed seating on immobile picnic table and benches in the plaza.

Figure 5.31 Westminster Quay: Primary movable seating on plastic bistro chairs and tables in the plaza.
were arranged differently; some days there were more, some days there were less. By the end of any given day, they were in totally different arrangements than the way they started in the morning.

Most of the people occupying the chairs and tables in the plaza were usually eating something, which suggests that they were inside the market and purchased food. During lunch and dinner hours (more so lunch hours), the tables and chairs in the plaza were usually fully occupied, and the ledge along the boardwalk was also full with people sitting and eating.

Only a few secondary seating opportunities exist in the Plaza. These are found on the two wooden bollards and the bronze cannon statue. Sitting on top of these items was a favorite spot for having photographs taken. Children and the odd adult also enjoyed playing and sitting on the decorative Bell Buoy, which is located near the entry portion of the Plaza.

5.9.5 Lighting

There are two types of lighting present in the plaza and boardwalk. Along the rail of the boardwalk and in the landscaped planter which separates the boardwalk from the plaza, posts with two decorative hanging lamps are located every 20 feet (6.56 metres). Hanging from these lamp posts are pairs of hanging planters. The lamp posts and shades are painted white and powder blue and the nautical theme of the site.

In the plaza and along the steps which take people from the boardwalk up to the plaza, there are wooden and concrete decorative bollards which have ground lights built into them. These bollards are also located along the edge of the plaza, near the parking lot to the east of the market.

At night, the shaded lamps hanging from the lamp posts in combination with the bollard ground lights produce a subdued, indirect soft light, which may not be comfortable for people who fear the dark. The lighting creates the same effect one might have felt on the old industrial docks of the Pacific Coast Terminal which previously inhabited the site.
Figure 5.28 Westminster Quay: Railing and lamp standard.
Figure 5.29  Westminster Quay: Ground level bollard lighting and sitting on the planter ledge.
Figure 5.32
Westminster Quay: Exposed aggregate concrete garbage receptacle next to planter ledge along edge of boardwalk.

Figure 5.33 Westminster Quay: Public art and history reflected in an old cannon taken from a historic exploration ship.
5.9.6 Garbage Receptacles

All servicing and garbage bins for the market are located out of public view, on the north side of the market, along Quayside Drive. In the open space between the market and the water's edge, there are garbage receptacles located on each side of the steps which pass between the boardwalk and plaza. These receptacles are built of exposed aggregate, which matches the plaza floor. However, there are few of these garbage cans which often results in people leaving their garbage on the tables or ledge along the boardwalk.

5.9.7 Public Art & History

There are numerous pieces of public art and history in this open space area which compliment the nautical river theme of the open space. On the western portion of the boardwalk there is a large bronze statue of Simon Fraser. In the plaza between the boardwalk and the market there are two bronze cannons replicating those which were found on a British military ship which protected the Fraser River during colonial times at Fort Langley, B.C.

At the eastern part of the open space, there is a large Bell Buoy in the entry plaza, on which kids enjoy playing (as shown in Figure 5.36). On the boardwalk, at the eastern end, there is a kiosk in the shape of a wheel house from an old tug boat, which accommodates the tour boat ticket and information outlet.

The most prominent and fun piece of public art is the "Expo Tugger" playground, which was once set-up at Expo '86. The "Tugger" consists of the superstructure and wheel house of a large tug boat. Both outside and in, children and adults can turn dials, crank reels, adjust knobs, move levers and imagine they are the captain of the ship. The "Tugger" provides history, fun and imagination all into one, while providing an active recreation component which enhances the nautical theme of the open space. The Tugger can be seen in Figures 5.34 and 5.35.

5.9.8 Views and Visual Interest

As well as all the on land activities of the Tugger playground, the market, the plaza and the boardwalk, there are also many things to watch on the river. Directly in front of the boardwalk, on the water, is a small wharf which accommodates RivTow's tug boats.
Figure 5.34
Westminster Quay: Expo Tugger playground, front view.

Figure 5.35 Westminster Quay: Expo Tugger, side view.
Often the tug boat operators would leave their radios on full volume, adding a working waterfront component to the site. Also, views of tug boats chugging along towing barges and log booms, further enhances the ambiance of the working waterfront. Views of freighters being loaded at the Surrey Docks, across the river, can also be seen.

Occasionally, a speed boat or jet ski riders will pass by the site, and sometimes even put on a bit of a show for people on the boardwalk. The excitement of the sound of their engines is always bound to turn a few heads and get people to walk over to the rail to get a closer look.

At the east end of the site, there are two paddle-wheeler river boats which take people on tours of the river. On the west end of the site, the Samson V, an old paddle-wheeler, is docked and serves as a nautical museum showcasing the history of the Fraser River.

In addition to these unintentional components of visual interest, programmed events and entertainment occur in the open space from time to time. The market programs entertainers, such as the Soul Survivors reggae band, to play in the plaza on summer weekends. The occasional carnival and festivals such as the Fraser River Festival and the Hyack Festival also take place in the open space at Westminster Quay. In each case, these events and entertainment enhance the experience one has when visiting the water's edge.

5.9.9 Sun Angles and Shade

Due to its southeastern exposure, the site enjoys sunlight from sunrise until early evening (in the summer). The site would probably benefit from more sunlight in the evening if the Inn at the Quay hotel, directly to the west of the site, was not built out over the river and obstructing the site's evening sun.

Throughout the day, many people escape the sun by sitting in the Tugger playground or by sitting in parts of the plaza which are shaded from the sun by the shape of the market. Often, people will move the chairs around in the plaza, to find a spot that enjoys either greater sun or greater shade. The bistro umbrellas of the plaza also provide limited amounts of shade.
Figure 5.36
Westminster Quay: Street musician performing in front of old bell buoy which provides a place for children to sit or play.

Figure 5.37 Westminster Quay: Rivetow wharf in front of the boardwalk.
Figure 5.38 Westminster Quay: Signage in a maritime river theme.
5.9.10 Theme and Character

As demonstrated by all of the design elements discussed so far, the open space at Westminster Quay has a distinct nautical theme and character. This theme is defined to celebrate the Fraser River, as reflected by the Expo Tugger playground, the Simon Fraser statue, the bronze cannon and the Samson V paddle-wheeler and is successful in tying the different components of the site together.

5.10 Analysis and Observations

In order to determine who uses open space at the water's edge and how they use it, data and observations examining human behaviour, using the methodology described in section 4.6 of the previous chapter, were collected. To collect a representative cross-section of data, observation periods took place at different hours of the day, on weekdays and weekends. To be consistent, all observations were taken on sunny days during the summer months when daylight hours are at a maximum and the largest number of people use outdoor open space. Rather than comparing total numbers of activities and groupings, relative frequencies of each activity and grouping were calculated for each observation period in order to limit external factors such as weather. Trends were identified, analyzed and compared for overall, weekend and weekday observations.

5.10.1 Overall Trends

The total number of activities and groupings for all observation periods at Westminster Quay were calculated. From this number, relative frequencies of each activity and grouping were calculated as percentages of the total. Activities and groupings were then ranked from highest to lowest in frequency. Figure 5.39 illustrates these frequencies. Throughout the following analysis, these frequencies are noted in parentheses.

5.10.1.1 Activities: How the Space is Used

In ranking the activities, five distinct trends emerged from the data. Sitting accounted for almost half of all activities as reflected by Primary Sitting in the Plaza (23%) and Secondary Sitting on the Boardwalk (22%). Walking, as noted by Walking on the Boardwalk (15%) and Walking in the Plaza (13%), was the second most frequent activity. Passive activities such as Standing Stationary (8%) and Leaning on the Rail (6%) were the
Westminster Quay
Overall For All Observation Periods
Frequency of Activities

Figure 5.39
next identifiable group. Another group included Adults Pushing Strollers (3%), Adults Watching/Playing in the Playground (3%), Kids Playing in the Playground (2%), and Biking (2%). The most infrequent activities were Wheelchairing (0.6%) and Walking Dogs (0.4%).

5.10.1.2 Sitting

Primary Sitting in the Plaza (23%) and Secondary Sitting on the Boardwalk (22%) accounted for almost half of all activities taking place in the open space at Westminster Quay. This pattern is consistent with Cooper Marcus, who suggests that seating space is the most important design element in plaza use (Cooper Marcus, 1990:32).

Whyte's studies of plazas in New York City concluded that people will sit where there are places to sit (Whyte, 1984:28). In the waterfront open space at Westminster Quay, there is a good supply of both primary and secondary seating. In the plaza, two fixed picnic tables, constructed of wood and exposed aggregate concrete, and numerous movable plastic bistro chairs and tables (some with umbrellas) provide many seating opportunities, and were fully occupied during most observation periods. Since the plaza is located directly in front of the market, where food is sold, many people Sitting in the Plaza were eating food, therefore causing what Whyte calls "triangulation".

As will be demonstrated later in the hourly observation analysis, the number of people Sitting in the Plaza peaked at noon then declined in the late afternoon, followed by an evening peak near dinner time. People tended to move the movable chairs to the sunny areas of the plaza. Also, groups, rather than male/female pairs or singles tended to occupy the seats in the plaza. As soon as a group would leave a table or an individual would leave a seat, the seats and tables would be quickly occupied by other people, therefore accomplishing a sense of "self-congestion". In other words, the seating was consistently occupied at maximum effective capacity.

There were little opportunities for Secondary Sitting in the Plaza, and thus the number of instances of this type of sitting activity was almost 0%.
Figure 5.40 Westminster Quay: Movable chairs in the plaza moved to the edge of the plaza.

Figure 5.41 Westminster Quay: Primary movable bistro chairs and tables in the plaza.
Figure 5.42

Westminster Quay: Secondary sitting on the planter ledge benches.

Figure 5.43 Westminster Quay: Secondary sitting on the stairs and the planter ledge benches at the edge of the boardwalk.
Secondary Sitting on the Boardwalk (22%) took place on the benches along the planter ledge which separates the boardwalk from the plaza. As with the plaza, this seating space was consistently occupied at maximum effective capacity during eating hours. However, not everybody seated here was eating. Many people were relaxing and watching the view of the river and people on the boardwalk. If people sitting here were eating, ice cream and frozen yogurt were what most of them were eating.

There were more male/female pairs and individuals sitting on the ledge benches than groups. As the benches became more occupied, peoples' social space would reduce and they would sit closer together. Just as with the plaza seats, if a space was vacated on the benches, others would soon fill the space.

Other than the secondary ledge benches, there were no primary seats located on the boardwalk. Occasionally, people would move a couple of the chairs onto the boardwalk, but this did not happen often. During one observation period, there was a merry-go-round set-up on the boardwalk, which provided limited primary seating opportunities. However, both of these instances were not enough to make Primary Seating on the Boardwalk a noticeable activity.

5.10.1.3 Walking

Walking was the next most frequent activity, accounting for almost a third of all activities. Walking in the Plaza (13%) was often undertaken by people accessing the market from the boardwalk or the parking lot (or vice-versa). These people would quickly pass through the plaza to reach some other destination such as the boardwalk, market or parking lot. In the entry to the market portion of the plaza, there is no seating, therefore walkers can pass through the space without visual, social or physical obstructions. However, in the portion of the plaza between the market and the boardwalk, walkers must weave their way through tables and chairs, which are often occupied by people eating. Although passing through this area is more congested, it provides more excitement and the destination is the boardwalk.

On the other hand, most people Walking on the Boardwalk (15%), did not visit the market but were walking only on the boardwalk, from one end to the other. Many people would continue along the waterfront Esplanade, to the west, which provides pedestrian circulation between the commercial and residential neighbourhoods of Westminster Quay.
Figure 5.4 Westminster Quay: Leaning on the Rail.
The Boardwalk, which is constructed of wooden plank boards positioned perpendicular to
the water's edge, is free of any seating, garbage cans, or other street furniture, and thus
allows unobstructed walking (garbage cans, low level lighting and seating are located next
to the planter on the market-side edge of the boardwalk while overhead lighting is along the
rail). The only obstacle on the boardwalk is other people, who may be walking, standing
stationary, leaning on the rail, walking a dog, riding a bike, pushing a stroller, riding a
wheelchair, etc., all of which cause the pace to be slow on the boardwalk, especially during
busy times.

5.10.1.4 Passive Activities

Passive activities such as Standing Stationary (8%) and Leaning on the Rail (6%) were the
next identifiable group of activities. People Standing Stationary were usually speaking
with people who were sitting and eating. Some of the people Standing Stationary were in
the line-up to purchase ice cream or frozen yogurt from the window vendor on the side of
the market. This observation reflects Cooper Marcus' observation that people are intrigued
with watching other people eat and line-up to buy food (Cooper Marcus, 1990:43-46).

When people wanted to look at the river view, if they were not sitting, they tended to stand
and Lean on the Rail at the edge of the boardwalk. The rail is the closest the public can get
to the water. They cannot touch the water (depending on the tide it can be between ten and
twenty-five feet below the boardwalk) but they can get an unobstructed view of the water
and the river activity while Leaning on the Rail. Most people Leaning on the Rail had their
views focused out towards the river.

5.10.1.5 Active Activities & Children

The more active activities of Adults Pushing Strollers (3%), Adults Watching/Playing in the
Playground (3%), Kids Playing in the Playground (2%) and Biking (2%) were the next
discernible group of activities. It is interesting that all of these activities usually involved
children and adults. Also, the fact that there were more adults than children in the
playground on average, would suggest that possibly two adults (parents or otherwise) were
watching each child. The "Expo Tugger" playground, located on the eastern edge of the
boardwalk, provides lots of excitement for kids and adults alike. There are benches inside
Figure 5.45 Westminster Quay: Pushing strollers on the boardwalk.
and large unglazed open windows on the front and sides of the Tugger so adults/parents can enjoy good visual access to their children when they are playing in the Tugger playground.

The low frequency Biking could be attributed firstly to the fact that there is only one small set of bike racks, which are located far away from the water's edge, out of view, near the front of the market. As a result, cyclists park their bikes on the rail which blocks the view of the river for boardwalk and plaza users. Secondly, although the Esplanade connects the residential portions of Westminster Quay to the boardwalk near the market, the site is separated from the remainder of New Westminster by the railway tracks. The at-grade crossing of the tracks at the foot of Begbie Street does not provide safe access for bicyclist, since three sets of tracks must be crossed and bikes are integrated with automobile traffic at the crossing. Questionnaire results found that people riding their bikes to the site tended to have traveled from residences in the nearby Westminster Quay residential neighbourhood.

5.10.1.6 Wheelchairs & Walking Dogs

The least frequent activities taking place in the open space at Westminster Quay were Wheelchairing (0.6%) and Walking Dogs (0.4%). The low frequency of Wheelchairing could be the result of the same barriers to access caused by the railway as were experienced by cyclists. Also, most people in wheelchairs were located on the boardwalk or entry plaza, which are both easily accessible from the parking lot, without level changes. Few or no wheelchairs were seen in the plaza between the market and the boardwalk, probably because due to the stairs which separate the boardwalk from the plaza here, and because there are many obstacles including tables and chairs within this plaza.

There were very few people Walking Dogs (0.4%) at Westminster Quay. This is also probably due to the limited pedestrian access. The residential neighbourhoods near Westminster Quay are predominately low and medium rise apartments in which pets are not permitted. However, after asking a number of the people walking dogs where they lived, the majority lived in Westminster Quay, and had walked to the site along the Esplanade.
Figure 5.46 Westminster Quay: Wheelchairing.

Figure 5.47 Westminster Quay: Biking on the boardwalk.
Figure 5.48

Westminster Quay: Walking dogs on the boardwalk.

Figure 5.49 Westminster Quay: Feeding frozen yogurt to the dog on the planter ledge seating.
5.10.1.7 Groupings: Who Uses the Space

The overall numbers for all observation periods at Westminster Quay identified four different trends for the groupings of people. The first trend involved Male/Female Pairs (Couples), the most frequent grouping accounting for 27% of all groupings recorded. The next identifiable group was the Single Males making up 20% of the total. The third trend included Single Females (16%), Males and Females in Groups two or more people (15%) and Females in Groups of two or more (13%). The least frequent grouping was Males in Groups of two or more (9%). Figure 5.50 illustrates the frequency of groupings for all observation periods.

Although the frequency numbers yielded the trends specified above, if the rank order of groupings is analyzed, it becomes apparent that there were three sub-groups as follows:

- Male/Female Pairs (Couples)
- Singles (Male or Female)
- Groups of Two or More People (Males or Females or combined)

5.10.1.8 Singles

If Single Males (20%) and Single Females (16%) are added together, singles account for 36% of all groupings using the open space at Westminster Quay. Most of these singles were either seniors (appearing to be over 65 years of age) or young adults (appearing to be 25 to 35 years of age). The seniors were often seen sitting on the easily accessible secondary seating ledges of the planter, along the edge of the boardwalk. As well as watching the river, these people enjoyed watching people walking on the boardwalk. The sitting ledge was at such a height that senior singles could comfortably sit-down and get-up without difficulties. Also, to get to these benches from the parking lot or Esplanade, there is no change in grade or stairs for seniors to encounter.

In the evening hours, after 6:00 p.m., a sub-group consisting of a few senior single males inhabited the space. These men appear to be poor and homeless, by their appearance and the shopping buggies full of pop cans, garbage bags and second hand goods that many of them have at their side. On any evening at least one of these people could be seen, usually sitting on the ledge along the planter at the edge of the boardwalk, which makes a
Westminster Quay
Overall For All Observation Periods
Frequency of Groupings

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Males</td>
<td>25%</td>
</tr>
<tr>
<td>Single Females</td>
<td>20%</td>
</tr>
<tr>
<td>Males in Groups (≥2)</td>
<td>15%</td>
</tr>
<tr>
<td>Females in Groups (≥2)</td>
<td>10%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>5%</td>
</tr>
<tr>
<td>Males/Females in Groups</td>
<td>0%</td>
</tr>
</tbody>
</table>

Figure 5.50
comfortable place to sit or lay down and relax (or sleep). These single men keep to themselves and usually do not even talk to one another. In his study of Seagram’s Plaza in New York City, Whyte found that when open spaces are not used extensively is when the sub-group he calls "undesirables", inhabit the space (Whyte, 1980:68).

Young adult singles were often seen riding bikes or jogging on the boardwalk. Many young adults could also be seen sitting on the seating ledges of the planter and on the stairs which separate the boardwalk from the plaza. Often, as these people were sitting here, they were also eating. Occasionally, by the looks of their uniforms, some of these people appeared to be market employees taking breaks from their jobs. Some of the young adult singles were walking dogs along the boardwalk.

5.10.1.9 Male/Female Pairs

If analyzed individually, Male/Female Pairs (Couples) were the most frequent grouping, accounting for 27% of all groupings. According to Whyte, the best plazas and open spaces are ones which are full of couples and groups, which as a result, attract more individuals (Whyte, 1980: 17). The large number of Male/Female Pairs (Couples) using the waterfront open space at Westminster Quay appears to accomplish this condition.

Most of the Male/Female Pairs were either walking along the boardwalk or sitting in the plaza between the market and the boardwalk. The ones who were sitting were usually eating and would occupy a table that was designed to seat four people, therefore under utilizing the space. However, other singles, groups and Male/Female Pairs would often ask Male/Female Pairs sitting at tables in the plaza if they could use extra chairs, since these chairs are movable.

The majority of the Male/Female Pairs consisted of males and females who were close in age. The age of Male/Female Pairs ranged between 25 and 75 years of age (the user survey data in previous sections explained the age profile in more detail). There were also a few instances where a Male/Female Pair consisted of a mother and son or a father and daughter. The sons and daughters were usually, but not always children. Young children were being pushed in strollers or buggies by adults.
5.10.1.10 Groups

For the purposes of this thesis, a group means either two or more males together, two or more females together or males and females together in a group of at least three people. If all groups are totaled together, Males/Females in Groups (15%), Females in Groups (13%) and Males in Groups (9%) made-up a total of 37% of all groupings. As with the couples, this large number of groups, is consistent with Whyte's analysis that the best open spaces are ones in which there are many Male/Female Pairs and groups. However, if each group type is analyzed individually, the frequencies of each group are much smaller.

There were more Females in Groups (13%) than Males in Groups (9%). The number of Females in Groups (13%) was almost the same as the number of Males/Females in Groups (15%). The majority of Males in Groups consisted of male pairs. There were very few groups of males that were greater than two people. On the other hand, the Females in Groups consisted largely of three or more females together. Often, these female groups would be intergenerational as represented by what appeared to be a grandmother, mother and daughter (who was a child); or a mother and two daughters (all adults). There were also many groups of female seniors in groups of two or three. These intergenerational and (senior) female groups seemed to be more frequent on weekdays than weekends, as reflected by the differences between the patterns shown in Figures 5.57, 5.58 and 5.59 (on pages 120 to 122).

Most Females in Groups were either Walking on the Boardwalk or Sitting in the Plaza. The female groups Sitting in the Plaza were often eating.

Most Males in Groups were between the ages of 25 and 55. Males within any given group were often of the same age. In a few instances, a male group consisted of a father and son (who is a child). This type of group was more prevalent on weekdays than weekends as reflected in Figures 5.57, 5.58 and 5.59.

Most Males in Groups were either Walking on the Boardwalk or sitting on chairs, which they had moved to the edge of the plaza, in the plaza between the market and the boardwalk. These male groups, often consisting of two males were usually not eating but engaged in a conversation while looking out towards the river.
Males/Females in Groups accounted for 15% of all groupings. These groups usually consisted of families with either one or two parents (male or female) and at least one or more children. Many of these groups were also made-up of seniors with either two male/female pairs, or a male and two females or female and two males. In all cases, groups were usually seen sitting in the plaza eating, and often overcrowding the tables (designed for four people) with extra movable chairs; or were walking slowly along the boardwalk. In both cases, these groups would act as obstacles taking-up much of the space in the plaza and boardwalk. They caused a sense of self-congestion by creating visual excitement for people watchers, while slowing the pace of the boardwalk and plaza.

Males/Females in Groups were more frequent on weekends than weekdays, as reflected by the patterns in Figures 5.57, 5.58 and 5.59.

5.10.2 Weekend Versus Weekday Trends

In addition to the overall trends for all observation periods, different trends emerged when comparing the weekday and weekend observations. The majority of these differences took place in the sitting and walking activities, and to a lesser degree in the passive and a few of the active activities. As well, there were differences in the groupings of people using the open space in almost all of the categories of groupings. Figures 5.51, 5.52, 5.53, 5.54, 5.57, 5.58 and 5.59 compare the overall, weekday and weekend trends and illustrate these differences.

The total number of activities for all observation periods at Westminster Quay was 2,971. Of this number, 2,025 activities took place during the weekend observation periods while 946 took place on weekdays. In relative terms, weekend activities accounted for 68% of all activities, while weekday activities accounted for 32%, which is close to a two-thirds/one-third split. This weekend increase was probably due to the fact that people have more recreation time available on weekends. The overall two-thirds/one-third split does not reflect the outcome of the way the space is designed, since it does not compare individual activities or design elements, but simply is a total, which represents overall usage and attendance in the open space on a weekday versus a weekend.
Figure 5.51

Comparison of Frequency of Activities Overall Versus Weekday and Weekend Westminster Quay

Activities

- Adults Watching/Playing in Playground
- Kids Playing in Playground
- Pushing Strollers
- Wheelchairing
- Walking Dogs
- Biking
- Leaning on Rail
- Standing Stationary
- Walking on Boardwalk
- Secondary Siting on Boardwalk
- Secondary Sitting in Plaza
- Primary Sitting on Boardwalk
- Primary Sitting in Plaza
- Walking in Plaza
- Walking
- Standing Stationary
- Leaning on Rail
- Biking
- Wheelchairing
- Pushing Strollers
- Kids Playing in Playground
- Adults Watching/Playing in Playground

Weekend

Weekday

Overall
## Westminster Quay

### Overall Versus Weekday Weekend Comparison of Frequency of Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Overall</th>
<th>Weekday</th>
<th>Weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Sitting on Boardwalk</td>
<td>2%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Primary Sitting in Plaza</td>
<td>23%</td>
<td>36%</td>
<td>13%</td>
</tr>
<tr>
<td>Secondary Sitting on Boardwalk</td>
<td>22%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Secondary Sitting in Plaza</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Walking on Boardwalk</td>
<td>15%</td>
<td>14%</td>
<td>15%</td>
</tr>
<tr>
<td>Walking in Plaza</td>
<td>13%</td>
<td>15%</td>
<td>12%</td>
</tr>
<tr>
<td>Standing Stationary</td>
<td>8%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Leaning on Rail</td>
<td>6%</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>Biking</td>
<td>2%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Walking Dogs</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Wheelchairing</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Pushing Strollers</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Kids Playing in Playground</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Adults Watching/Playing in Playg</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Figure 5.52
Frequency of Activities:

- Primary Sitting on Boardwalk
- Primary Sitting in Plaza
- Secondary Sitting on Boardwalk
- Secondary Sitting in Plaza
- Walking on Boardwalk
- Walking in Plaza
- Standing Stationary
- Leaning on Rail
- Biking
- Walking Dogs
- Wheelchairing
- Pushing Strollers
- Kids Playing in Playground
- Adults Watching/Playing in Playground

Weekday All Observation Periods Frequency of Activities

Figure 5.53
5.10.2.1 **Activities**

By comparing the frequency of individual activities taking place on weekdays versus weekends, differences became apparent. Most differences involved sitting and walking activities, but could also be seen in the passive (such as Standing Stationary and Leaning on the Rail) and some of the active activities (primarily Biking).

5.10.2.2 **Sitting**

The greatest differences occurred in Sitting in the Plaza. On weekdays, this activity accounted for 36% of all activities, but then decreased to only 16% on weekends. This decrease was attributed to the fact that on weekdays, most people attending the open space had come to Westminster Quay not just to enjoy the open space but to shop in the market, as was evident by the grocery bags they were carrying and because they would travel through the open space to access the market. Almost all of the people sitting in the plaza were eating food, especially in the noon and afternoon observation periods. Many of these people were either Singles or Females in Groups, and appeared as though they were taking an outdoor meal break from the hustle and bustle of the indoor market. Some of these people appeared to be market staff by the looks of their uniforms.

The next greatest difference was in the frequency of Secondary Sitting on the Boardwalk. The frequency of this activity increased from 15% on weekdays to 25% on weekends. All of the increase in this activity took place on the ledge benches, along the landscaped concrete planter at the edge of the boardwalk. As with Sitting in the Plaza, most of the people seated on the ledge on weekdays were eating food and appeared to have come out of the market. However, on weekends, as was also reflected by the small increase in the number of people Walking on the Boardwalk, most people sitting on the ledge were relaxing and watching the river and other people on the boardwalk. A few of these people were eating ice cream or frozen yogurt and some were drinking coffee.
Figure 5.55 Westminster Quay: Secondary sitting on the boardwalk floor.

Figure 5.56 Westminster Quay: Primary seating in the plaza.
5.10.2.3 Walking

The frequency of Walking on the Boardwalk remained consistent with a slight 1\% increase on weekends from 14\% on weekdays to 15\% on weekends. At the same time, Walking in the Plaza experienced a decrease in frequency from 15\% on weekdays to 12\% on weekends, making it a less frequent activity than Walking on the Boardwalk on weekends. Less people used the plaza as an access route to the market on weekends. Instead, more walkers had come to the site to see the river and walk along the boardwalk and Esplanade. Questionnaire results were consistent with this conclusion by indicating that many of the people who attend the open space at Westminster Quay on weekends did so to relax, to exercise and to see the river (Figure 5.19 on page 75 demonstrates the questionnaire results which yielded this trend). The boardwalk and the ledge seating along the edge of the boardwalk provide opportunities for these activities to take place.

5.10.2.4 Passive Activities

The two passive activities of Standing Stationary and Leaning on the Rail experienced increases in frequency on weekends. Standing Stationary doubled in frequency from 5\% on weekdays to 10\% on weekends. This increase took place in the plaza and on the boardwalk. In the plaza, most of the standees were standing next to a table where part of their group was sitting and eating. On the boardwalk, standees were usually standing in the middle of the boardwalk, either involved in a conversation, looking at the river view or watching their children (if they had children in their group). Some people standing on the boardwalk were standing next to the ledge seating at the edge of the boardwalk, where their spouse or someone in their group was sitting.

5.10.2.5 Active Activities

Biking experienced a slight increase in frequency on weekends while Walking Dogs and Wheelchairing experienced slight decreases.

Biking increased from only 1\% frequency on weekdays to 3\% on weekends. Most cyclists on weekends appeared to enter the site from the Esplanade, to the west, which would suggest that they either lived in the residential portion of Westminster Quay, or they entered Westminster Quay on the less congested overpasses which cross the railway at McInnes Avenue and Third Avenue.
The frequency of Walking Dogs decreased from 1% on weekdays to almost 0% on weekends. Walking dogs was more frequent on weekday evenings, as demonstrated in Figures 5.51 and 5.53 and Appendices A.1 and A.2. In like manner, Wheelchairing decreased from 1% on weekdays to almost 0% on weekends. In both cases, the scale of the boardwalk and the plaza became tighter when the space was crowded with slow moving people on weekends. This self-congested environment results in various obstacles for people in wheelchairs and walking dogs. As a result, less of these activities occurred on weekends.

### 5.10.2.6 Activities Involving Children

The three activities involving children experienced no change in frequency between weekdays and weekends, but remained constant. However, groupings of adults and child appeared to shift from a majority of young mothers with babies on weekdays, to fathers, mothers and children of ages 1 to 12 on weekends. This shift is reflected in the decrease in the frequency of Females in Groups from 14% on weekdays to 12% on weekends and the increase in frequency of Males/Females in Groups from 22% on weekdays to 30% on weekends. On both weekdays and weekends, there were more adults than children in the Expo Tugger playground. However, on weekdays, there were more mothers (or female guardians) in the playground, while on weekends there were both mothers and fathers (or female and male guardians) in the playground.

### 5.10.2.7 Groupings

Various differences in the data also became apparent when comparing the frequency of groupings on weekdays versus weekends. The greatest differences involved Singles, Male/Female Pairs and Males/Females in Groups.
Westminster Quay
Overall Versus Weekday & Weekend
Comparison of Frequency of Groupings

Figure 5.57
Westminster Quay
Weekday For All Observation Periods
Frequency of Groupings

Figure 5.58
Westminster Quay
Weekend For All Observation Periods
Frequency of Groupings

Figure 5.59
5.10.2.8 Singles

On weekdays, Singles (both male and female totaled together) accounted for 43% of the groupings. Of this number, 24% were Single Males and 19% were Single Females. As mentioned in the "Overall for All Observation Periods" section of this chapter, many of these Singles were either between the ages of 25 and 35, or were seniors. However, on weekends, the frequency of Singles decreased to 35%. The number of Single Males (18%) and Single Females (17%) was almost the same on weekends. The majority of the decrease in frequency of Singles was in Single Males, decreasing by 6%.

5.10.2.9 Male/Female Pairs and Groups

At the same time, the frequency of Male/Female Pairs and Males/Females in Groups largely increased. Male/Female Pairs increased by 8%, from 22% on weekdays to 30% on weekends. Males/Females in Groups increased by 10%, from 9% on weekdays to 19% on weekends. Most of the weekend Male/Female Pairs and Males/Females in Groups were either Sitting in the Plaza and eating, or were Walking on the Boardwalk. Some of the weekend Male/Female Pairs were sitting on the ledge next to the boardwalk. Many of the weekend Males/Females in Groups were families with young children. Often, a grandparent or senior would be included in these family groups. Other weekend groups consisted of two Male/Female Pairs. Some weekend groups consisted of either two senior females with a senior male or two senior males with a senior female. However, this type of senior group was more prominent on weekdays. Males/Females in Groups were also largely comprised of mothers (or female guardians) with male and female children on weekdays.

Contrary to the increase in the frequency of Male/Female Pairs and Males/Females in Groups, the frequency of Males in Groups and Females in Groups decreased on weekends. Males in Groups decreased from 12% on weekdays to 7% on weekends, while Females in Groups decreased from 14% on weekdays to 12% weekends. The decrease in the number of Males in Groups (and the decrease in the number of Single Males) on weekends suggests that either less males attend the open space on weekends, or if they do attend, they do so with females in Male/Female Pairs or groups.
5.11 Summary

The New Westminster Quay case study uncovered various lessons. In addition to reviewing the design and use of the waterfront open space at Westminster Quay, the case study pointed out other factors which also affected use. A review of the current policies which regulate waterfront redevelopment in New Westminster proved that there are currently no design policies which guide the development of waterfront open space.

The New Westminster waterfront has a long history involving industrial uses. As industrial buildings became old and less viable due to technological advances and relocation of some industries, large tracts of underused waterfront land became available. New Westminster seized the opportunity to redevelop these lands. To accommodate the process of change, a joint venture established between the City and the British Columbia Development Corporation (BCDC - a provincial crown corporation), which was called the First City Development Corporation (FCCDC), was an effective means for acquiring the large tracts of dilapidated waterfront land and to redevelop these lands with a mix of residential, commercial and public open space uses. As redevelopment occurred, a strip of land parallel to the water's edge was dedicated for park and public access to the waterfront and was developed into what is called the Esplanade.

New Westminster's municipal policies are consistent with the FCCDC principles regarding dedicating the water's edge for public access, as reflected in various municipal policy goals and objectives. These policy statements have provided a strong basis for achieving public access to the waterfront and pedestrian linkages to waterfront open spaces. However, nowhere in the policy framework is there mention of design principles regarding how the space should be designed or what purposes the space should serve, therefore providing the rational for this study.

From the case study, it was found that access to the waterfront open space was crucial to the way the space was used. Westminster Quay, although providing a continuous open space parallel to the water's edge which links the waterfront residential neighbourhoods to the commercial market, had poor access for pedestrians coming from outside of the Quay neighbourhood. The railway crossing provided a barrier to pedestrian and automobile access. The design techniques implemented to cross this barrier were ineffective. The pedestrian bridge overpass of the railway had too many steps for people, including seniors citizens, the physically challenged, bicyclists and people pushing children in strollers, to
climb. As well, the at-grade railway crossing at the foot of Begbie Street did little to protect the pedestrians from the automobiles and trains. As a result, the number of people who had used pedestrian means to access the open space was small, as reflected by the user survey questionnaire results. These same results, and the consistently filled parking lot determined that the majority of open space users had accessed the site by automobile. However, even automobiles were faced by the constraints posed by the (often congested) railway crossings. The majority of open space users who had accessed the site by pedestrian means, had come from the adjacent waterfront neighbourhoods, by means of the Esplanade.

The waterfront open space at Westminster Quay was dominated by two overall design features: the boardwalk, and; the plaza. The boardwalk provided the edge along the waterfront, while the plaza provided the linkage and transition between the built form edge and the waterfront boardwalk. The land-based plaza was surfaced with the solid materials of exposed aggregate concrete and brick pavers while the water-based boardwalk was surfaced with wood, a softer material. Within each of these spaces, there were various elements of design. Between the two spaces, a landscaped planter with seating on its ledge (on the boardwalk side) and a few shallow steps provided a boundary and transition between the plaza and boardwalk. This landscaping also provided shade opportunities and protection from wind for plaza users.

Along the edge of the boardwalk, was a railing, which was the closest people could get to the water's edge. A few primary benches (with tables) and numerous movable chairs and tables were located in the plaza. Along the ledge of the planter and on the steps (between the plaza and boardwalk), there were secondary seating opportunities. There was sufficient lighting located on lamp standards along the waterfront rail and on bollards along the edge of the plaza. Lighting, as well as street furniture, public art and signage, all had a consistent working river theme and character, which was consistent with the industrial heritage of the New Westminster waterfront. A playground in the shape and colours of a river tug boat provided various play opportunities for children as well as telling a story about the history of the site. This playground, called the Expo Tugger, was also in keeping with the theme and character of the open space and provided a catalyst for children's and adults' imaginations.

The dominant activities in the waterfront open space were walking and sitting, as determined by the frequency of activity observations. The boardwalk provided an excellent
medium for walking and was often filled with people walking. The user survey questionnaire results discovered that exercising was a major purpose for coming to the open space at Westminster Quay. Many people walked through the plaza to get from the market or the parking lot to the boardwalk.

The primary benches and movable chairs in the plaza and secondary planter ledge benches along the boardwalk provided numerous seating opportunities. Movable chairs were brought out or put away according to seating demand. These chairs were moved around the plaza frequently, to accommodate smaller or larger groups and allowing open space users to catch a better view of the water or escape or capture sunlight. As primary seats became congested, the steps and planter ledge benches provided alternative seats for many people. Many of the people sitting were also eating food which had been purchased from the market.

The survey results also identified that viewing the river was a major reason for attending the space. Most people sitting or walking had their eyes pointed towards the river. The closest view of the river was obtained by the many people who would lean on the boardwalk rail, which was the closest the public could get to the water's edge.

Demographic statistics demonstrated there is a critical mass residential population in the vicinity of Westminster Quay, and that the majority of this population consists of Singles and Male/Female Pairs, living in multiple dwelling buildings (apartments and townhouses). There were very few families in this population. The majority of the respondents in the user survey were either seniors over 65 years in age, or between the ages of 30 to 40. The grouping data pointed out there were more males than females using the open space and that the majority of the users were in Male/Female Pairs or Males/Females in Groups (together) of greater than 3 people. As the number of Male/Female Pairs and Males/Females in Groups increased so did the number of Male Singles and Female Singles, which is consistent with Whyte's observation of New York City plazas.

The Westminster Quay case study provided an excellent example for studying the process of waterfront change and acquisition of the water's edge for public open space uses. It also established a strong basis from which to compare a second case study (Steveston Landing, which will be discussed in the following chapter) and provided an example against which the findings of the literature regarding the design of urban plazas could be made.
Chapter Six

Case Study: Steveston Landing
6.0 Case Study: Steveston Landing

6.1 Location

Steveston Landing, a small commercial development with waterfront open space and a public fish sales dock, is located on the shores of the South Arm of the Fraser River, on the edge of Cannery Channel, in the southwest corner of the City of Richmond. Figure 6.3 shows the context of Steveston Landing in Richmond.

The site of Steveston Landing lies within the historic community of Steveston, which has a heritage focused on the river and ocean as expressed by the canneries, ship yards, maritime marine markets and the fishing boat fleet which inhabit Steveston.

Steveston Landing is bounded by Cannery Channel on the south, a gas dock and numerous canneries to the east, the Gulf of Georgia Cannery and Pacific fleet of fishing boats to the west, and the town of Steveston to the north.

6.2 Physical Setting

The site is located on the top of the South Arm dyke. As redevelopment occurred, the water's edge was reinforced with rip rap of medium-sized rocks, in order to provide flood protection and provide habitats for fish and wildlife species.

Located along the South Arm of the Fraser River, the site experiences tidal flooding and ebbing from the Georgia Strait. However, Steveston Island (also called "Shady Island"), which separates Cannery Channel from the South Arm, provides shelter and protection of the site from fluvial erosion processes and wind coming from the Strait. Steveston Island has formed over time as the result of the collection of fluvial deposits near the mouth of the South Arm and from deposits of sand spoil dumped on the island from river dredging. Since there is no development on the island, it serves as a habitat for various bird and wildlife species.

Vista Views from the site extend to the south towards Westham Island and the South Arm. To the west, distant vista views extend to the Strait of Georgia and Gulf Islands. To the west, the site enjoys immediate views of the Pacific Fleet of fishing boats.
Figure 6.1 *Steveston Landing.*

Figure 6.2 *The open space at Steveston Landing.*
Figure 6.3 Steveston in the context of Richmond.
(moored) and the Gulf of Georgia Cannery. Directly to the east, there are immediate views of canneries and fishing boats located along the north side of Cannery Channel.

Uninterrupted southern exposure allows direct sunlight to reach the site during most daytime hours. Some shade areas are experienced internal to the site, however, these are the result of the design of the development, not the location of the site.

6.3 History

Steveston, a community which has a heritage involving the fishing industry and farming in its upland areas, is named after the pioneer, William Steves, whose father, Menoha, settled in Richmond in 1877. By the end of the 1800's, Steveston was the largest, most prosperous population centre in Richmond and was the location of the Lower Mainland's largest fishing port (Richmond Planning Department, 1992: 37). By 1914, there were 14 fish canneries in operation, a number of hotels, an opera house, theatre and numerous stores.

Many of the original buildings of Steveston were destroyed in fires during 1917 and 1918. Fortunately, most of the cannery buildings still exist and some buildings have been restored. As a result, Steveston has maintained a strong sense of community, largely based on its heritage.

Over the past decade, Steveston's waterfront area has been dramatically reshaped. As a result of the decline in the number of canneries over the past several decades and an increase in the attraction of tourists to Steveston and its waterfront, in 1987, the Minister of Fisheries, (past Richmond Member of Parliament) at that time Mr. Tom Siddon, presented a report by the Fisheries Department recommending the development of some federally-owned waterfront properties (Ross, 1989: 12-13).

Later in that same year, the federal government unveiled plans to build a public fish sales float at the foot of Second Avenue and a waterfront commercial development, soon to be named "Steveston Landing", along Bayview Street at the foot of Second Avenue. Prior to the commencement of development, the site existed as a parking lot which serviced the Pacific Fleet moorage.
Steveston Waterfront Properties Inc. won the federal bid to develop the site. Their proposal included the construction of a restaurant, small shops and a pub, as well as a pedestrian extension of Second Avenue to connect to the public fish sales float, and a boardwalk along the water's edge. In order to achieve public access to the water's edge, the pedestrian extension and boardwalk were requirements of the terms of reference for federal tender bids.

Throughout 1988, the Steveston Landing proposal received much opposition and criticism from the fishermen and local merchants, who feared that the development would create a barrier separating the town of Steveston from the waterfront, and that the waterfront would become a yachts basin for tourists, displacing the fishing boats. However, in late 1988, Richmond Council approved the development scheme and despite many attempts by the community to halt the development by requests to the B.C. Supreme Court, in 1989, development of Steveston Landing began.

Today, the site remains federally owned, and is leased to the developer, whose sub-lets the commercial units. The boardwalk is not included in this lease, but out of good will, it is maintained by the developer. The public fish sales float is owned by the federal government and is operated and maintained by the Steveston Harbour Authority, which is a subsidiary of the Fraser River Harbour Commission.

6.4 Transportation and Access

The circulation system at Steveston Landing is comprised of four components: gateways, the road network, the pedestrian and bike path network and parking. Public Transportation does not play a major role, since bus routes do not pass or stop near Steveston Landing, but are located five blocks away (which is within walking distance) at the intersection of Moncton Street and No. 1 Road.

6.4.1 Gateways

The entrance to the site at the intersection of Second Avenue and Bayview Street is designed to create a pedestrian gateway to the river which invites movement of people from the centre of Steveston on Moncton Street, along Second Avenue and into the site. Although only pedestrians can pass through the gateway, the gateway is located directly
Figure 6.5 Major roads which connect Steveston Landing to the rest of Richmond. (Taken from City of Richmond, 1992)

*NOTE: All roads have curbs and gutters (C/G) unless otherwise noted.

MAJOR ROAD NETWORK

- ■ MAJOR ARTERIAL
- - LOCAL ARTERIAL

- SIGNAL
- STOP SIGN

STEEVESTON

0, 300 METRES
JANUARY 1984
adjacent to Bayview Street, thus connecting the automobile and pedestrian realms for access to the river.

Shops, frozen yogurt and other food stores line each side of the plaza within the gateway and further enhance the sense of passage on the way to the water's edge. Often, the centre of this passage is interrupted by chairs, parked bicycles or people, causing congestion and excitement.

6.4.2 Road Network

Bayview Street, which parallels the Steveston waterfront, abuts the northern edge of the site, and provides two-way automobile access to the site. There are numerous road linkages which connect Bayview Street to Moncton Street and No. 1 Road, the arterial roads which connect Steveston to the rest of Richmond. The closest of these linkages is Second Avenue which provides automobile access from Moncton Street to the site. Figure 6.5 illustrates the road network in the vicinity of the site.

6.4.3 Pedestrian and Bike Path Network

Steveston Landing benefits from an excellent pedestrian trail network which connects Steveston Landing with downtown Steveston, local arterial roads, Garry Point Park (to the west of the Steveston town site) and the dyke trails. Figures 6.7 and 6.8 show the trail network, which was developed by the Richmond Leisure Services Department as originally proposed in the Richmond Trails Plan drafted in 1978 (Stiches, 1991).

From the user survey data collected at Steveston Landing (which will be discussed later in this chapter), it was apparent by the 21% of respondents who walked and the 25% who biked to the site, that the trail system is an effective means of public access to the waterfront at Steveston Landing. Together, these figures total 46% which is equal to the number of respondents who accessed the site by automobile. The activity data collected at Steveston Landing (also be discussed later in this chapter) demonstrated that bicycling and walking were the dominant activities taking place in the open space at Steveston Landing. (Figure 6.48 shows these trends). The large number of people who had accessed the site by bicycle was evident by the number of bikes parked throughout the space, as shown in Figures 6.9 and 6.10.

136
Passes through Steveston Landing.

(Taken from City of Richmond, 1992)
Figure 6.8 Pedestrian trails in nearby Garry Point Park which link to Stoneyton Landing site. (Taken from City of Richmond, 1992)
Figure 6.9 Steveston Landing: Bicycles parked on the rail.

Figure 6.10 Steveston Landing: Bicycles parked on the plaza floor in the centre of the plaza.
6.4.4 Parking

There are two at-grade on-site surface parking areas at Steveston Landing (as shown in Figure 6.28 on page 168). Both of these parking areas access Bayview Street, however, together they accommodate only a total of 25 cars, which is far below the average parking demand for people visiting Steveston Landing. As a result of a condition of development permit based on municipal parking regulations, there is also a larger surface parking lot on the north side of Bayview Street which is for the exclusive use of Steveston Landing users. This lot is also part of the federal lease and is maintained and operated by the developer of Steveston Landing.

Street parking is available along portions of Bayview Street and other streets throughout Steveston. Directly adjacent to the site, angle parking is available on Second Avenue.

6.5 Land Use and Zoning

The Steveston Landing site is zoned C-4 Commercial and is the only portion of the Steveston Waterfront that is zoned commercial and accessible to the public. The remainder of the Steveston waterfront is zoned I-2 Industrial, and is the location of numerous canneries and shipyards along Cannery Channel.

To the north of Steveston Landing, C-4 Commercial zoning dominates most of the Steveston townsite, especially on Second Avenue and Moncton Street (as shown in the zoning map in Figures 6.11 and 6.12). To the east and north of Steveston there are detached single family dwelling residential neighbourhoods.

6.6 Policy Context

Various policies, from different levels of government and different jurisdictions, regulated the development of the open space at Steveston Landing. However, in most cases, these policies did not provide specific principles, guidelines or criteria regarding the design of the space. Instead, they simply state that there shall be open space for public use at the water's edge.
Figure 6.11. Designated land uses in the vicinity of Steveston Landing.

(Taken from City of Richmond, 1992)
6.6.1 Municipal Policies

The City of Richmond Zoning and Development Bylaw provides standards for the development of buildings and the provision of open space based on a percentage of the number of residents living within a development. However, it does not provide any guidelines regarding how open space should be designed.

The Steveston Area Plan, which makes up part of the Richmond Official Community Plan, provides policy statements regarding public access to the water's edge. Some of these statements include:

"Objective 13:

To ensure that open space and viewpoints are provided along the waterfront in future developments creating a continuous open space system throughout the Steveston area....

13.3 Support the design of waterfront development which preserves and enhances waterfront viewpoints for the public."


The Steveston Area Plan also prescribes a minimum park space per thousand population of 2.63 hectares (6.5 acres) (Richmond Planning Dept., 1992: 17). However, it does not provide any design principles or criteria regarding the design of waterfront open space.

Steveston Landing lies within the study area of the Steveston Development Permit Area and is therefore subject to compliance with the Design Criteria for the Steveston Revitalization Area guidelines, which were drafted in 1987. Figure 6.13 defines the area impacted by these guidelines. These guidelines served as the primary means for the Steveston Downtown Design Concept shown in Figures 6.14 and 6.15.

These guidelines provide elaborate design guidelines and criteria for the buildings and street sidewalks, but do not provide any guiding principles or design criteria for the development of waterfront open space. Section 1.2 of the guidelines provides specific development guidelines for the facade of buildings and the treatment of the sidewalk for sites flanking Bayview Street, in what is defined as the "Bayview Street (C-4 Zoning District) Character Area" (which is shown on the map in Figure 6.16), but does not mention anything about
the open space on the waterfront side of buildings along Bayview Street (City of Richmond, 1992: 9).

The most sophisticated policies the City of Richmond offers regarding open space at the water's edge are contained in two policy documents: the Criteria for the Protection of Environmentally Sensitive Areas: A Design Manual, and; Amendment Bylaw No. 5554 (amending the Official Community Plan, Bylaw No. 5400) regarding Float Home Marinas.

Section two of the Criteria for the Protection of Environmentally Sensitive Areas: A Design Manual addresses "Special Design Considerations for Foreshores". In this section, the following policy guidelines regarding public access to open space at the foreshore are presented:

1. Foreshore developments should dedicate or preserve a natural vegetated buffer strip within the first 30m (100 ft.) of the high-water mark of the Fraser River and estuary, except where access is essential for water transportation or public use. Where there is existing vegetation, the width of the buffer may be averaged to preserve significant stands of trees.

3. Public access to the waterfront for the purpose of recreation or education should be designed into each foreshore development in a manner which is consistent with the natural values of the site."

(City of Richmond, 1991: 5-7).

Appendix A of the same document provides guidelines regarding "Construction Practices to Preserve Natural Areas". Guideline number six of this appendix states:

"Recreation Access

Pedestrian or bicycle access pathways should be provided in locations approved by the Municipality. Access paths should be a minimum of 2 m (6 ft.) wide and should consist of compacted crushed limestone or equivalent. Slopes should not exceed 1:6, especially adjacent to waterways. Access for disabled persons is desirable.

Public access to the slough edge or "beach" should be limited to certain areas only, Other areas should be protected by dense plantings of hearty shrubs, or retention of existing dense brush."

(City of Richmond, 1991:13).
These guidelines establish a basis for achieving public access to the water's edge and for preserving vegetation, fish and wildlife species along the foreshore. However, they do little to define criteria regarding how this space should be designed. The only reference to the actual design of the water's edge is illustrated in two sketches which appear in Figures 6.17 and 6.19. The following text complements this sketch:

"Where waterfront access is required for industries or public purposes, every effort should be made to preserve existing foreshore vegetation by building docks out over the water on piles and by "bridging" the sensitive foreshore and intertidal zone..."

(City of Richmond, 1991: 6).

As can be seen in the sketch in Figure 6.17, the "bridge over the rip rap" is the same way which the boardwalk and rip rap at Steveston Landing have been developed. Although this sketch and the associated guidelines provide direction on the development of waterfront boardwalks, they do not provide suggestions or guidelines regarding the design of open space on top and upland of such boardwalks.

In much the same manner, Amendment Bylaw No. 5554 provides statements regarding public access to the waterfront, foreshore preservation and development of boardwalks. This bylaw defines the shoreline as consisting of the intertidal area plus the area within 30 metres of the high-water mark, and that a buffer strip of existing natural vegetation of an average width of 15 metres should be maintained on the shoreline of environmentally sensitive areas.

As outlined in the Criteria for the Protection of Environmentally Sensitive Areas and Amendment Bylaw No. 5554, the area upland of the high-water mark is under the jurisdiction of the municipality while the wetted area below the high-water mark is under the jurisdiction of the federal government (through the offices of the Fraser River Harbour Commission and the Steveston Harbour Authority). This relationship is illustrated in Figure 6.18.
Figure 6.14 The Steveston Downtown Design Concept.
(Taken from Richmond Planning Department, 1992)
Figure 6.15 Urban design framework for Steveston Revitalization Area.

(Taken from Richmond Planning Department, 1992)
CHARACTER AREAS

CHATHAM ST. CHARACTER AREA:
- CONVENTIONAL COMMERCIAL BUILDINGS WITH PARKING IN FRONT (ON CHATHAM)
- NEW BUILDINGS TO HAVE SIMILAR SETBACK AND CHARACTER AS EXISTING (ADJACENT) COMMERCIAL BUILDINGS.

MONCTON ST.
- SMALL COMMERCIAL BUILDINGS, MAXIMUM TWO STOREYS
- BUILT TO THE STREET LINE NO MORE THAN 2m SETBACK
- FALSE FRONT,gable end or flat roofs
- CONTINUOUS RETAIL OR COMMERCIAL FRONTAGE

BAYVIEW ST.
- MIXTURE OF SMALL SHOPS AND FISHING INDUSTRY BUILDINGS
- VIEWS OF THE WATER
- STEP DOWN 2 STOREY HUMAN-SCALE BUILDINGS TO THE NORTH
- SPECIAL TREATMENT OF 5m SETBACK FROM BAYVIEW ST.

Figure 6.16 The Bayview Street Character Area within Steveston.
(Taken from Richmond Planning Department, 1992)
In Amendment Bylaw No. 5554, more specific guidelines regarding the development of waterfront public viewing wharves and boardwalks are provided. Section One of the bylaw states that:

"Wharves should not extend over marshes or other productive foreshore areas. Wharves should, in any case, not extend over the water beyond the mean low-water mark, except for wharves which are less than 8 metres wide and are for the purpose of access to floats or public viewing access."

(City of Richmond, 1990: 1).

Figure 6.17 illustrates the relationship of the foreshore, rip rap, intertidal marsh and wharves defined in the policy statement above.

In Section Two of the bylaw, which discusses "Public Access", the following guidelines regarding access to the foreshore and foreshore walks and boardwalks are presented:

"A continuous 3 metre wide public access pathway should be constructed parallel to and as close to the water's edge as practicable provided it does not impact wildlife habitat areas.

In existing marinas where it is not possible to provide a continuous public access, then a public pier of a minimum of 20 square metres should be provided at the water's edge. The pier shall be connected to the municipal trail or sidewalk via a minimum 1.5 metre wide walkway."

(City of Richmond, 1990: 2).

Figure 6.19 shows examples of a 3 metre continuous public access path and a 20 square metre public pier with a 1.5 metre connecting walkway. These guidelines address public access to the water's edge, and even provide some minimum standards for the configuration of waterfront paths and public piers. Figure 6.19 also suggests that the continuous public access path and public pier be constructed of wood in a boardwalk fashion. Also, connections of the waterfront with existing upland municipal trails and roads are discussed. There is even a small section regarding landscaping which states that all undeveloped portions of the upland shall be landscaped, and that one tree shall be planted for every 15 metres of waterfront. Trees located on the dyke are required to be in planters or have root containers (City of Richmond, 1990: 2).
Figure 6.17. Intertidal area and redeveloped waterfront.

(Taken from Richmond Planning Department, 1992)
Figure 6.18 Cross-section of water's edge showing where senior government jurisdiction takes precedence.

(Taken from Richmond Planning Dept., 1992)
Figure 6.19 Examples of 3m public access path and public pier.

(Taken from Richmond Planning Dept., 1990)
Figure 6.20 FREMP map showing Fraser River Recreation Units. Note unit #3 is the Steveston waterfront. (Taken from FREMP, 1990)
Figure 6.21 FREMP map of Steveston Recreation Unit. (Taken from FREMP, 1990)
However, there are no design criteria provided regarding the design of the space on top of the public paths and piers. There are no principles or guidelines which discuss materials, seating, railings, surface treatment, lighting, signage, garbage receptacles, circulation, boundaries and transitions, use and activities, scale, theme, public art, maintenance, microclimate, level changes or landscaping.

6.6.2 Senior Government Policies

The policies of the Fraser River Estuary Management Program (FREMP), which coordinates senior level government agencies and their associated policies to regulate development of the water's edge along the Fraser River, which were referred to in the previous Westminster Quay chapter, also apply to Steveston Landing.

A FREMP report entitled, Report of the Habitat Working Group, provides environmental design recommendations for the construction of new or restored dykes for Fraser River developments. These recommendations suggest that dykes should be designed to include habitat compensation by placing a bench marsh in the intertidal section of the rip rap (FREMP, 1991: 27). Although it cannot be seen from the open space, the rip rap in the dyke under the boardwalk at Steveston Landing includes this environmental design feature.

In the report, A Recreation Plan, the Recreation Activity Group of FREMP identifies Steveston as a "Recreational Unit". Within this recreation unit, the report describes Steveston Landing as having "safe access" to the waterfront with interpretive signage about habitat and fish (FREMP, 1990: 32-35).

6.7 Demographic Profile

In order to obtain an understanding of the demographic characteristics in the vicinity of Steveston Landing, 1986 Statistics Canada census data were abstracted for enumeration areas within a 500 metre radius of the site. 1986 Census data were used because at the time of the research, and currently, more recent 1991 census data is not readily available for enumeration areas.
From the Statistics Canada data, the following profile was defined:

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>2,110</td>
</tr>
<tr>
<td>Males</td>
<td>1,040</td>
</tr>
<tr>
<td>Females</td>
<td>1,075</td>
</tr>
<tr>
<td>Occupied Private Dwellings</td>
<td>775</td>
</tr>
<tr>
<td>Single Detached Houses</td>
<td>530</td>
</tr>
<tr>
<td>Ave. # of Persons/Household</td>
<td>2.75</td>
</tr>
<tr>
<td>Non-Family Households</td>
<td>190</td>
</tr>
<tr>
<td>Total # of Families</td>
<td>600</td>
</tr>
<tr>
<td>Ave. # of Children/Household</td>
<td>1.15</td>
</tr>
</tbody>
</table>

(Statistics Canada, 1987).

From these data, it is apparent that there is a critical mass of residential population in the vicinity of Steveston Landing. Over 77% of the occupied private dwellings were inhabited by census family households (which include husband/wife families and single parent families) in 1986. The small number of average people per household (being 2.75) and average number of children per household (being 1.15) suggests that many of the families were either young families or families approaching empty nesting, with only one child living in the house in either case.

Approximately 68% of the households were located within single detached dwellings. Although the number of single detached houses has probably increased since 1986, the relative frequency of the number of households in multiple dwellings has probably immensely increased since 1986, as a result of the construction of multiple family housing in Steveston.

According to the 1986 Statistics Canada census data, the area in the vicinity of Steveston Landing not only had a larger population than the areas (within a 500 metre radius) around Westminster Quay (which had a total population of 890 in 1986) and Bridgepoint (which had a population of only 340), but also had a much larger percentage of families living nearby. Westminster Quay only had about 210 families, making-up only 39% of the households there, while Bridgepoint only had 75 families, making-up 56% of the households there. It should be noted that the total population of the Westminster Quay area has probably increased with the construction of numerous multiple family dwellings in the area.
Quay area. However, since many of these units have only one or two bedrooms, the number of families has probably not increased by much.

Of this population, many more of the Steveston Landing area people lived in single detached houses (68% of all households), while only 0.9% of the Westminster Quay area people and 67% of the Bridgepoint area people lived in single detached houses.

From this demographic profile, it is apparent that in 1986, there was a greater critical mass of residential population and families in the vicinity of Steveston Landing than in the Westminster Quay and Bridgepoint areas, and that many of these people lived in single detached houses. This resident population represents a potential user group who live close by, and may even walk or ride bikes to access the site. The next section examines survey data collected at Steveston Landing in order to determine the origins of people attending the open space.

6.8 User Profile

Using the same method used at Westminster Quay, and previously described in section 4.8 of this study, a questionnaire was circulated to a random sample of open space users at Steveston Landing, on a sunny weekend afternoon in July, 1993. The following section summarizes the findings of the survey data.

As demonstrated in Figure 6.23, in response to question one, the majority of the people at Steveston Landing had either traveled between 2 to 4 miles (29% of all respondents) or 11 to 30 miles (33% of all respondents). These data suggest that almost one-third of the people at Steveston Landing live in the vicinity of Steveston. This observation is further proven by the results of question three, which are shown in Figure 6.25. Forty-two percent of the respondents resided in Richmond. The only other noticeable origin was Vancouver, where 25% of the respondents resided.

To determine how these people traveled to Steveston Landing, the results of question two, shown in Figure 6.24, point out three major trends. The majority of the people either arrived by automobile (46% of all respondents), walked (25% of all respondents) or bicycled (21% of all respondents) to the site. Almost nobody used public transit to access the site; most likely because the bus routes are over five blocks away from the site.
Figure 6.22

Steveston Landing
Demographic Profile of Respondents

Age Group

Frequency

0% 10% 20% 30% 40% 50% 60%

0 to 15 16 to 25 26 to 35 36 to 45 46 to 55 56 to 65 66 to 75 75 and Older

- Males
- Total
- Females
Steveston Landing
Distance Travelled From Residence
(In Miles)

Distance Travelled (Miles)

0% 5% 10% 15% 20% 25% 30% 35%

0 to 1 2 to 4 5 to 10 11 to 30 31 or More

Figure 6.23
Steveston Landing
Mode of Transportation
Used to Travel to Site

![Bar Chart]

- Automobile: 45%
- Motorbike: 10%
- Bus: 25%
- SkyTrain: 15%
- Bicycle: 10%
- Walked: 5%

Figure 6.24
Together, 46% of the respondents used pedestrian means to access the site. This frequency equals the number of respondents who drove automobiles. This finding would make sense since many of the people who walked or bicycled to the site were most likely part of the 29% of respondents who lived between 2 to 4 miles from the site. In other words, a critical mass of Steveston Landing users live close by the site, and excellent pedestrian access to the site is made possible by the integration of the design of the site (without level changes) and the Richmond Municipal Trails and road systems, as reflected by the 46% who walked or bicycled to the site.

This is in contrast to Westminster Quay, where the same questionnaire was conducted. The results yielded that most respondents drove to the site, and had traveled long distances from other municipalities to reach Westminster Quay (as previously discussed in section 5.8).

In response to question four, which enquired about the purpose for coming to the site, Figure 6.27 displays the frequency of responses. Respondents were able to provide multiple responses to this question since there may have been numerous purposes for their trip to the site. From the graph in Figure 6.27, it is apparent that most people came to Steveston Landing to either exercise or view the river. The people whose purpose was to exercise were usually the same people who walked or bicycled to the site. The next most popular purposes were to eat and to shop. Many of the people who responded that their purpose was to shop, clarified that it was to shop for fish. This purpose is also partially represented by the 21% of respondents who didn't necessarily want to buy fish, but wanted to see the fish and the fish boats. The purposes of meeting friends, people watching and relaxing were the next most popular, each with a frequency ranging from 13% to 17%.

These findings point to conclusions that the following items should be built into the design of a waterfront public open space, as they appear to be at Steveston Landing:

- Good pedestrian access to the site
- Good automobile access to the site
- Opportunities to buy food
- Opportunities to sit or stand and eat food
- Opportunities to shop
- Visual Interest and Catalysts for Visual Interest
- Maximize View Potentials
- Opportunities for People to Sit or Stand to Relax and Watch the Water

The following section, analysis of the incidence of each of these items as reflected in the context and design of the waterfront open space at Steveston Landing.

Question five asked how many times a year respondents attended Steveston Landing. The frequency of responses to this question are shown in Figure 6.26. From this figure, three groups appear to dominate. The number of respondents who made over 50 trips to the site in one year was 30%. Broken down, 17% made 50 to 99 trips a year and 13% made over 100 trips a year. This number most likely corresponds to the 29% who lived 2 to 4 miles from the site, many who walked or bicycled to the site.

Twenty-nine percent of the respondents made between 1 to 5 trips to the site in one year. From the completed questionnaires, it was apparent that most of these people were the ones who had driven to the site, many who lived in the City of Vancouver.

The third group which stands out were the people who had visited Steveston Landing for the first time. Approximately 17% of the respondents were of this type, some of which were tourists and others who did not know that Steveston Landing existed but had been brought to the site by friends or come across it by accident.

To get an understanding of the age and sex profile of the people attending the open space at Steveston Landing, the age and sex of each respondent was noted. The results of these notes are shown in Figure 6.22 on page 159. From this figure, it appears as though the majority of the people were between ages of 26 to 35 years. Another group which stands out, but to a much lesser degree are the seniors between 66 to 75 years of age.

It is also interesting to note that in the younger age groups of respondents, there were slightly more males than females, while in the 46 to 55 year age group there were more females than males. In the 56 to 65 year age group this trend reversed. In the seniors age groups over 66 years in age, the number of males and females was the same.
Figure 6.26

Frequency

<table>
<thead>
<tr>
<th>Number of Trips</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Time</td>
<td></td>
</tr>
<tr>
<td>Once in 5 Years</td>
<td></td>
</tr>
<tr>
<td>Once in 3 Years</td>
<td></td>
</tr>
<tr>
<td>Once in 1 Year</td>
<td></td>
</tr>
<tr>
<td>1 to 5 Times a Year</td>
<td></td>
</tr>
<tr>
<td>6 to 10 Times a Year</td>
<td></td>
</tr>
<tr>
<td>11 to 24 Times a Year</td>
<td></td>
</tr>
<tr>
<td>25 to 49 Times a Year</td>
<td></td>
</tr>
<tr>
<td>50 to 99 Times a Year</td>
<td></td>
</tr>
<tr>
<td>100 or More Times a Year</td>
<td></td>
</tr>
</tbody>
</table>

Number of Trips to Site

Steveson Landing
Figure 6.27

Multiple Responses per Respondent
Purpose for Trip to Site
Stevenson Landing
There were almost no respondent users in the 16 to 25 year age group. It should be noted that these figures represent only the random sample of open space users who were interviewed with the questionnaire on site. Although many children were present at the site during the time of the surveys, children were not interviewed or represented in this sample, since it was assumed that they may not provide complete or accurate answers.

6.9 Elements of Design

In much the same fashion as Westminster Quay, the waterfront open space at Steveston Landing is dominated by two overall design features, within which numerous elements of design are situated. These two dominant features are the boardwalk and the plaza. Unlike Westminster Quay, these features are not separated by boundaries or level changes, but rather are integrated together on an axis and function as one large open space. The plan view of Steveston Landing illustrated in Figure 6.28 shows the relationship between these two features.

The smaller, more intimate scale of Steveston Landing, created by placing buildings closer to the water's edge, enhances the integrative relationship between boardwalk and plaza, as can be seen in the photograph displayed in Figures 6.29 and 6.30.

Although the boardwalk and plaza function together, the individual design elements, such as seating, street furniture, microclimate, sunlight, circulation, etc., vary within each. These different uses will be discussed further in the following sections.

6.9.1 Boardwalk

A wooden boardwalk parallels the water's edge for the entire distance of the Steveston Landing development. This boardwalk is reminiscent of the historic "Bunkhouse Boardwalk", which linked the canneries to upland bunkhouses during the late 1800's, in the vicinity of the Steveston Landing site (Figure 6.31 shows a photograph of the historic Bunkhouse Boardwalk).

At each end of the boardwalk, there are bicycle racks and level connections to the Richmond Municipal Trails System. Each bicycle rack accommodates approximately 12 bikes. Also at each end, there is direct, level access to the two small on-site parking lots which service Steveston Landing (as shown in Figures 6.28 and 6.32).
Figure 6.28 Steveston Landing: Plan view of open space.
cyclists, adults pushing strollers, people in wheelchairs and seniors have direct uninterrupted access to the boardwalk.

The east side of the boardwalk links-up with the neighbouring Bayview Pier development (which hosts numerous restaurants, artisan shops and offices). At the centre of the boardwalk, there is ramp access to the public fish sales dock, located in front of Steveston Landing (as shown in Figure 6.40 on page 180).

For the most part, the boardwalk is 20 feet wide, except where there are benches along the water side, where it extends for an extra 3 feet to accommodate the benches without interrupting the circulation of the boardwalk. At the centre of the open space, where the boardwalk and plaza integrate, the boardwalk extends an extra 20 feet out over the water to provide a linkage to the ramp which accesses the public fish sales dock.

The boardwalk is constructed of wooden planks oriented parallel to the water's edge, in a similar pattern as the original Bunkhouse Boardwalk which inhabited the site at the turn of the century. The orientation of these planks draws people in from both ends of the boardwalk to come into the centre of the site where the plaza integrates with the boardwalk. At this location, the boards shift into a circular star pattern, spanning out from a centre point which is marked by a brass inlay. The boards are intertwined with concrete patches, of the same concrete which is used to surface the plaza. This way the plaza and boardwalk become integrated as one at the centre of the open space, as well as providing a focus of attention. Figures 6.29 and 6.30 illustrate this integration of plaza and boardwalk at the centre of the boardwalk.

Underneath the boardwalk, the water's edge has been reinforced with a new dyke consisting of medium sized rip rap and an intertidal marsh, as recommended by FREMP. This dyke can be seen Figure 6.35. The dyke provides flood protection to Steveston Landing, as well as creating a habitat for intertidal vegetation, fish and wildlife.

On the edge of the upland side of the boardwalk, are the buildings of Steveston Landing which accommodate Dave's Seafood Restaurant on the west side of the plaza and the Shady Island Restaurant on the east. Both of these restaurants have full height windows which allow restaurant patrons to enjoy the river view as well as an opportunity to people watch the boardwalk activities. In like manner, the boardwalk walkers can watch the people in the restaurants.
Figure 6.29
Steveston Landing:
The boardwalk.

Figure 6.30 Steveston Landing: Integration of boardwalk and plaza. Note the ground materials and patterns.
Figure 6.31 Steveston Landing: The historic bunkhouse boardwalk which once inhabited the site is reflected by the current boardwalk.
Figure 6.32 Steveston Landing: The Boardwalk, looking east.

Figure 6.33 Steveston Landing: The boardwalk looking west.
This activity is further enhanced by the outdoor bistro seating which each of these restaurants has flanking the area where the boardwalk meets the plaza. In the case of Shady Island, outdoor seating also parallels and encroaches onto the western side of the boardwalk. In both cases, this outdoor bistro seating is not for the public, but is corded-off for use by restaurant patrons only. None the less, it creates visual excitement, and helps fill the outdoor space activity. For the purposes of this thesis, data regarding the frequency of activities and groupings do not include activities and groupings taking place in these bistro areas since they are not part of the public open space (but are private open space).

The boardwalk extends out over the high-water mark and is owned by the federal government. As a measure of goodwill, the developer/manager of Steveston Landing maintains the space on the boardwalk. This is a similar arrangement as to that at Westminster Quay, where the municipality owns the Esplanade boardwalk, but the management of Westminster Quay Market maintain the portion of boardwalk in front of the market.

As will be analyzed in following sections, Walking on the Boardwalk was the most frequent activity overall at Steveston Landing, as demonstrated by the frequencies shown in Figure 6.48 on page 191.

6.9.2 Plaza

In the centre of the site, the plaza provides a pedestrian connection between Bayview Street and the boardwalk and public fish sales dock. This plaza also serves as a street end park which allows a linear passage along Second Avenue, to link Steveston with the waterfront.

The plaza is approximately 20 feet in width and is flanked on each side by artisan souvenir shops, a seafood store and numerous food vendors. The food vendors shops have open walls onto the plaza, therefore giving a sense that the plaza extends into the shops, similar to an open marketplace. The roof overhangs over the store fronts have been exaggerated, to provide shade and protection from bad weather for plaza users. The souvenir shops provide opportunities for window browsing. Line-ups of people can often be seen in front of the food shops. At any given time, there was an average of 12 people in the frozen yogurt store line-up. This number occasionally peaked to 30 or more on some days.
Figure 6.34 Steveston Landing: Design concept of the integration of street, plaza, boardwalk and river.
Figure 6.35 Steveston Landing: Rip rap under the boardwalk.
Figure 6.36 Steveston Landing: Central area where boardwalk and plaza integrate.

Figure 6.37 Steveston Landing: The plaza.
Directly in the centre of the plaza there are two wooden benches placed perpendicular to the flow of the plaza, and two lamp standards with hanging planters. As well, movable chairs, which are offered by the Japanese sushi shop on the east side of the plaza, are often moved by passersby into the centre of the plaza to take advantage of sun or shade, and to ironically, get out of the flow of people. In actual fact they are located in the centre of the flow. People often stand next to the benches and seats to converse with their friends or family who are seated.

The result of all this activity is a cluttered space full of visual excitement, but with very few clear passages to access the boardwalk and water's edge. This condition is further amplified when bikes are parked in the plaza and people with babies position their strollers next to the seating in the plaza. The overall effect created by the design of the space and the way people use the space is a cluttered tunnel of activity which serves as a gateway or gauntlet passage to the waterfront.

Discussions with the developer identified that the municipality originally did not want benches to be placed perpendicular to the flow of the plaza, as they would create an obstacle to public access to the waterfront. However, although this orientation of the seating may not allow the most efficient circulation, it has created a space which appears vibrant and filled with people during all hours of the day.

The surface material throughout the plaza is concrete. As discussed in the previous paragraphs, there are no boundaries or level changes between the plaza and boardwalk. As the plaza reaches the central circular star portion of the boardwalk, there is a transition of surface materials from concrete to wood and concrete intertwined. The transition from plaza to boardwalk, although integrated, is further enhanced by the outdoor bistro seating of the two boardwalk restaurants, which create a visual transition between the end of the plaza and the beginning of the boardwalk.
6.9.3 Railing

As at Westminster Quay, the railing is the closest the public can get to the water while remaining safely on the shore. In fact, at the centre of the boardwalk, where the boardwalk protrudes out over the water, people can get a sense that they are on top of the water, as if they were on a boat. This may explain why many people would enjoyed leaning on the rail as illustrated in Figure 6.48.

Unlike the hard edged solid metal rail at Westminster Quay, the rail at Steveston Landing is constructed of a white metal top rail and posts, within which a series of metal cables and brackets provide the cross-pieces, as shown in Figure 6.38. This configuration creates a softer edge which is just as secure and safe as a completely solid metal rail, and has the same appearance of the cables which are used to support masts and railings on fishing boats. This design element is in-keeping with the nautical fishing boat theme of Steveston Landing.

This railing configuration allows for minimal maintenance since the cables do not require paint and can simply be tightened annually by turning the cable brackets. The cables and brackets also provide an exciting design feature for children and adults to touch and look at.

As shown previously in Figures 6.9 and 6.10, many bikes could be seen parked on the rail, as the cables at different heights provide an ideal place to lock bikes to. Due to the large number of bikes at Steveston Landing, the bike racks on other end of the boardwalk, which provide only 24 bicycle parking spaces, were usually full, causing more cyclists to park their bikes on the boardwalk rail. Bikes on the rail tended to clutter the rail for others who may have wanted to lean on the rail. However, they create visual interest and add to the vibrancy of the open space.

6.9.4 Destination - Public Fish Sales Dock

At Steveston Landing, people can also descend down the ramp to the public fish sales dock where they are only inches from the water and floating on top of the water. There is no rail on the fish sales dock. As many as 84 people were seen traveling down the ramp within a 5 minute period. As one fisherman noted, only 2% of these people actually buy fish; the rest just come to see the salmon, the fish boats and the river. These reasons for
Figure 6.38 Steveston Landing: The railing at the edge of the boardwalk.
Figure 6.39

Steveston Landing: The public fish sales dock.

Figure 6.40 Steveston Landing: The ramp to the public fish sales dock.
coming to Steveston Landing are also reflected in the user profile survey data (discussed in previous sections) whereby 21% of respondents came to Steveston Landing to see the fish and another 42% came to see the river.

6.9.5 Seating

There are two types of seating at Steveston Landing: primary seating on the benches, and; primary seating on movable chairs. There are no secondary seating opportunities in the open space, other than sitting on the floor (which rarely took place since the space was filled with people walking and other activities).

Primary wooden benches are located in two different locations. As noted in the boardwalk section above, there are 9 benches along the rail of the boardwalk. All benches are constructed of wood planks which match the boardwalk, and are about 5 feet in length. The benches have no backs, therefore people can sit on either side or end of the benches, as appeared to be the case when the benches became filled with people, and peoples' social space was reduced.

The boardwalk benches provide an excellent place to view the river and fishing boats. Because most of the benches are located in portions of the boardwalk which extend 3 feet out beyond the remainder of the boardwalk, these benches do not interrupt the flow of people walking on the boardwalk.

On the other hand, in the plaza, there are two wooden benches placed perpendicular to the flow of people, right in the centre of the plaza. As mentioned earlier, these benches are frequently used by people eating food purchased from the food vendor shops. The benches create a focus of attention for friends and family members who could not get a seat and ended up standing nearby the benches. As a result, the flow of the plaza became interrupted and congested.

Red folding movable chairs offered by the Japanese sushi store usually ended up right in the middle of the plaza, therefore further cluttering the plaza, and creating an obstacle course for passersby. Often, people moved movable chairs close to the benches, if they could not get a bench seat. Other times, the movable chairs were placed in the sun or shade depending on the user's preference.
Figure 6.41 Steveston Landing: Primary sitting on the boardwalk benches.

Figure 6.42 Steveston Landing: Primary movable chairs in the plaza.
These seated sun or shade seekers would often reposition their chair two or three times in one sitting, to either capture or evade the sun's rays.

As shown in the activity data for observation periods throughout the day (on both weekends and weekdays), the frequency of primary sitting on the boardwalk benches increased in the late afternoon and evening, while the plaza benches and movable chairs were used more frequently in the weekday late afternoon period.

6.9.6 Lighting

There is very little overhead lighting at Steveston Landing. There are two types of lighting in the plaza and along the boardwalk. At the centre of the boardwalk, there are two lamp standards on each side, along the rail. These lamps have white posts with blue shades, which is consistent with the nautical theme of the site. Hanging from either side of these lamp posts are planters, filled with trailing purple flowers (as shown in Figure 6.43).

At intervals along the rail, there are dome lamps on top of the rail posts. These dome lamps have white cages over them, which is similar to the light fixtures found on the exterior of a ship (as shown in Figure 6.38). Together, the overhead lighting and the post dome lamps provide dim lighting, reminiscent of the old cannery buildings which once inhabited the site.

6.9.7 Garbage Receptacles

Garbage receptacles do not match the theme. They are made of exposed aggregate concrete with black tops, which does not complement any of the other design elements in the open space. The garbage receptacles on the boardwalk are placed at the rail-side edges of the boardwalk, near the area where the boardwalk meets the plaza.

In the plaza, like the benches, the garbage receptacles are situated in the centre of the open space. Although these receptacles efficiently service people eating food, they are an eyesore which clutters the centre of the plaza area.
Figure 6.43 Steveston Landing: Lamp standards on the rail with hanging planters.
6.9.8 **Public Art and History**

There are no planned pieces of public art or historical reminders located in the plaza or on the boardwalk at Steveston Landing. However, the fishing boats docked on the public fish sales dock and moored beyond, as well as the Steveston heritage cannery architecture of the buildings provides a sense of history. There does not appear to be a need for formal reminders of the site's history.

Recently, a flag pole hosting the Canadian Flag was erected in the centre of the boardwalk near the access ramp to the public fish sales dock.

6.9.9 **Landscaping and Planters**

There are no planted beds or landscaping at Steveston Landing. Instead, there are four half-barrel floor planters which are filled with multi-coloured flowers. These barrel planters are all located near the outdoor bistro seating of the two restaurants on each side of the plaza/boardwalk interface and act as a boundary between the public space of the boardwalk and plaza and the private spaces of the restaurants. As well, the overhead lamp posts have flower baskets hanging from each side of their posts.

6.9.10 **Scale**

The buildings at Steveston Landing are only two stories in height and are located only 20 feet away from the water side edge of the boardwalk. By having buildings this close to the water, the scale of the boardwalk is small and intimate. Also, since the plaza is tightly flanked with shops on each side and cluttered with benches, lamp posts, planters, garbage receptacles and people, the scale of the space is very small, and does not take many people to make the space appear busy.

6.9.11 **Theme and Character**

A nautical theme which is symbolic of the Fraser River and Steveston's fishing boat and cannery heritage is apparent in almost all design features at Steveston Landing. This theme is consistently reflected in the colours, materials, signage and architecture of the buildings, boardwalk and plaza.
Figure 6.44 Steveston Landing: Public fish sales dock.

Figure 6.45 Steveston Landing: A fishing boat reflects the history and theme of Steveston Landing.
The buildings are massed in a shape which is similar to the historic cannery buildings to the east of the site. To further enhance the cannery look, the buildings are sided with light grey beveled 4 inch cedar siding. The windows have wooden muntin bars through which metal cross-braces which support the second floor above can be seen.

The rail, with its cable cross pieces and the white and blue overhead lamps and caged dome lamps add to this theme. However, the most important features, which provide the basis for the theme and character at Steveston Landing are the fishing boats. These are not planned and constructed design elements, but are a residual caused by the construction of the public fish sales dock.

The other residual design feature which enhances the theme and ambiance of the open space is the people which use the different catalytic planned elements of design. For example, when bikes are parked on the rail and people are sitting on the benches in the middle of the plaza, the space comes to life. The benches and the rail are planned and constructed; the people and bikes are not. They are attracted to use these elements and then become part of the design of the space.

The views and sounds of the river and scents of the fish and the river are natural features which also are not planned and constructed, but add to the nautical fishing boat/cannery theme of the open space.

6.9.12 Views and Visual Interest

There are numerous view opportunities and an abundance of visual interest in the open space and on the river. Two types of views are available: "framed views" and "panoramic views".

The "framed views", which can be seen from the end of Second Avenue and inside the plaza, looking-out towards the river, provide a glimpse of the activity taking place on the boardwalk and the river beyond. This window of activity is filled with design elements, people, shops, signs, bicycles, and fishing boats. Together, all this visual interest draws one's eye into the site and attracts people to enter the site by passing through the busy plaza to reach the boardwalk and waterfront. This attraction of people to activity and other people is consistent with Whyte's observation of plazas in New York City that "people attract more people".
Figure 6.46

Steveston Landing: Activity on the public fish sales dock.

Figure 6.47 Steveston Landing: A fishing boat docked at the public fish sales dock.
Panoramic views are seen from along the boardwalk. There are two types of panoramic views: close views and distant views. The close panoramic views look-out towards the fishing boats, public fish sales dock, Cannery Channel and Steveston (Shady) Island, all of which are in the foreground of the vista. These close views are filled with visual interest created by the fishing boats, maritime movement in Cannery Channel and the seafood sales, tour boats and people on the public fish sales dock. The high frequencies of people leaning on the rail (as shown in Figure 6.48 on page 191) was most likely attributed to the visual interest created by these close panoramic views.

On a clear day, distant panoramic views span out from Mount Baker (to the southeast) across Westham Island and the Fraser River, to the Strait of Georgia and Gulf Islands beyond (to the southwest). These distant views are limited by weather conditions.

6.9.13 Sunlight and Shade

Due to southern exposure and orientation of the buildings, the site benefits from continuous sunlight for most hours of the day, throughout the year. The boardwalk is always in direct sunlight and does not offer any design features which provide protection from the sun. The bistro seating areas in front of the two restaurants have umbrellas to provide shade. However, this space is for restaurant patrons only, and is not open to the public.

On the other hand, the exaggerated roof overhangs of the buildings and shops on either side of the plaza offer some shade and protection from the sun. As the day progresses and the sun moves across the sky, so does the location of shade in the plaza. In the summer months, after 5:30 p.m., the entire plaza is in shade since the buildings on the west side completely block-out evening sun (as shown in Figure 6.42 on page 182). The movement of the sun and shade throughout the day could be traced by watching how people constantly moved movable chairs throughout the plaza.

In the centre of the plaza, there are lamp posts situated next to each of the two wooden benches. These lamp posts are identical to the lamp posts on the rail of the boardwalk. Their dim light is enhanced by floodlights under the roof overhangs of the shops and by street lights along Bayview Street, which shine into the plaza resulting in different degrees of lighting.
6.10 **Analysis and Observations**

Data regarding how people use the waterfront open space at Steveston Landing were collected using the same methods that were used for Westminster Quay, whereby frequencies of each activity and grouping were calculated.

6.10.1 **Overall Trends**

Frequencies of activities and groupings were determined using the same methods as were applied for the Westminster Quay case study. From these frequencies, the trends and information discussed in the following sections were discovered.

6.10.1.1 **Activities: How the Space is Used**

Unlike at Westminster Quay where seating activities were the most frequent uses of the open space, at Steveston Landing walking on the boardwalk was the dominant activity. Figure 6.48 displays the frequency of activities which occurred at Steveston Landing. In the following list, the overall frequency of activities for all observation periods are listed in rank order:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking on the Boardwalk</td>
<td>21%</td>
</tr>
<tr>
<td>Standing Stationary</td>
<td>18%</td>
</tr>
<tr>
<td>Biking</td>
<td>12%</td>
</tr>
<tr>
<td>Primary Sitting on the Boardwalk</td>
<td>12%</td>
</tr>
<tr>
<td>Leaning on the Rail</td>
<td>11%</td>
</tr>
<tr>
<td>Walking in the Plaza</td>
<td>10%</td>
</tr>
<tr>
<td>Primary Sitting in the Plaza</td>
<td>8%</td>
</tr>
<tr>
<td>Pushing Strollers</td>
<td>4%</td>
</tr>
<tr>
<td>Walking Dogs</td>
<td>2%</td>
</tr>
<tr>
<td>Wheelchairing</td>
<td>2%</td>
</tr>
</tbody>
</table>

There were no frequencies of secondary sitting or playing in the playground, since there is no secondary seating or playground in the open space at Steveston Landing.
Primary Sitting on Boardwalk
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Primary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Playing/Watching in Playground

Frequency of Activities Overall For All Observation Periods
Steveson Landing
6.10.1.2 Walking

As shown in Figure 6.48, the dominant activity at Steveston Landing was Walking on the Boardwalk, which accounted for 21% of the activities. This activity was dominant for almost all observation periods. The consistently high frequencies of this activity were attributed to the excellent pedestrian access and circulation of the boardwalk. At each end of the boardwalk there are connections to the parking lots, Richmond Municipal Trails system and Bayview Street.

The boardwalk can also be accessed from the plaza at the centre of the site, which provides pedestrian linkages to Bayview Street, Second Avenue and the Steveston townsites beyond (by means of Second Avenue). Since there are no level changes between the boardwalk, the plaza and the access points, walkers, seniors, physically challenged people, bicyclists and people pushing strollers can easily access the boardwalk.

Once people access the boardwalk, the wooden planks which make-up the boardwalk are oriented parallel to the water's edge, and due to their vertical nature, draw people into the centre of the site. People know they have reached the centre when they see the changing pattern on the ground where a mixture of wood planks and concrete patches are presented in a star pattern. This mixture of materials not only symbolizes the centre of the site, but also acts as a crossroads on the boardwalk through which all people must pass to access the public fish sales dock or enter the plaza area. Figures 6.30 and 6.49 show the location of this cross-roads portion of the boardwalk. In order to reach the destination of the public fish sales dock, all people must partake in the activity of Walking on the Boardwalk.

The boardwalk is also where the best views of fishing boats and the river can be obtained. Benches are located in two nodes (one on the east side and one on the west), as illustrated in Figure 6.49. These nodes extend out over the water by 3 feet and therefore do not obstruct the circulation or views from the boardwalk.

The user survey questionnaire data presented in section 4.2.8 identified that many people had come to Steveston Landing to exercise and see the river, as was shown in Figure 6.27 on page 165. As well, 25% of the respondents had walked to the site. These data all point to the conclusion that walking is an important and frequent activity at Steveston Landing,
Figure 6.49 Steveston Landing: Plan view of open space.
and waterfront open space should be designed to facilitate this use. The boardwalk, with its uninterrupted walking opportunities, successfully accommodates this use.

On the other hand, Walking in the Plaza was not as frequent, and accounted for only 10% of the overall activities. Although the plaza provides the shortest distance connection between Bayview Street and the waterfront, the cluttered nature of the plaza places many obstacles on circulation. As a result, people often end up Standing Stationary rather than walking, which partly explains the high frequencies of the Standing Stationary.

There are many exciting design elements in the plaza, such as the two wooden benches, the two lamp posts with hanging flower baskets, the red movable chairs and even the garbage receptacle. However, all of these design elements have been placed in the middle of the plaza, creating an obstacle course for passersby. To add to these obstacles, shops which line each side of the plaza provide visual distractions with their window displays and elaborate signage (and occasionally sidewalk displays). The food shops are open onto the plaza which results in people lining-up in the plaza to buy food. The most pronounced food line-up was in front of the frozen yogurt shop, where as many as 39 people could be seen standing in the line-up.

The benches and chairs in the middle of the plaza attract people to sit on them, but since there are so few of them, some family members or friends were seen standing next to the rest of their group who was seated. People also had a tendency to park their strollers next to these benches. To seek sun, shade or be close to people sitting on the benches, the red movable chairs were often moved into the centre of the plaza.

The problem is, most of the design elements noted above, which are found in the plaza, cannot be situated at the sides of the plaza, because this is where the storefronts and food shop entries are. As a result, these elements have been squeezed into the middle of this already small scale space. Also, the benches and chairs attract people to sit or stand stationary nearby. The end result was a very busy space, often filled with people, but placing constrictions on circulation.
6.10.1.3 Passive Activities

As mentioned above, Standing Stationary was a popular activity, as reflected by the many people in food line-ups and who could not get a seat. As shown in Figure 6.48, Standing Stationary was the second most frequent activity within the open space at Steveston Landing, with a frequency of 18%.

As well as the standing in the plaza, many people would stand on the boardwalk. Standing Stationary on the boardwalk usually took place in three locations on the boardwalk. One location was next to the rail, where people would stand and view the fishing boats and river, without the interruption of benches, light posts, garbage receptacles or other people.

Another location where standing on the boardwalk took place was in the central area, where the boardwalk and plaza meet, as symbolized by the wood and concrete star pattern on the ground. This surface design causes many people to stop and look down at the ground, possibly trying to figure out what the pattern means. This centre area also provides a resting area where people who have just come up the ramp from the public fish sales dock can stop to rest and think about whether they wish to continue to the east or west along the boardwalk, or enter the plaza.

The third location for standing on the boardwalk was next to the benches, at the centre and on the eastern and western ends of the boardwalk. In much the same way as in the plaza, people who could not get a seat, or some who preferred to stand, would stand next to their friends or family who were sitting on the benches. Therefore, the large number of people Standing Stationary could be attributed to the fact that there were not enough benches or seating opportunities.

Overall, Leaning on the Rail was the fifth most popular activity, enjoyed by 11% of the people at Steveston Landing. The rail is where one can get the best view of the fishing boats and river. As the rail is conveniently designed to a height of about three feet, it is comfortable for most adults to lean on. The cables which act as cross pieces provide protection from children and dogs falling off the boardwalk, and children who cannot reach the rail can look through and hold onto the cables to see the river. The cables also provide a place for bikes to lock-up to, which unfortunately takes rail space away for those who wish to Lean on the Rail. A photograph displayed previously on page 139 in Figure 6.9 shows this situation.
However, even with bikes locked on the rail, there are many more opportunities for people to Lean on the Rail than to sit on the boardwalk benches to see the fishing boats and river and relax. As stated earlier, the user survey data showed that viewing the river was the purpose for 42% of the visits to Steveston Landing. Another 13% attended the site to relax. When people Leaned on the Rail, their views are almost always focused out to the fishing boats and river. These people appear totally relaxed and in a daydream, perhaps initiated by the view.

Leaning on the Rail was a more popular use of the open space on weekdays than on weekends. This may have been due to the fact that there were less people walking on the boardwalk on weekdays than on weekends, and therefore there was less congestion on the boardwalk and more space for people to relax at the rail.

6.10.1.4 Sitting

As discussed in previous sections, compared to Westminster Quay, sitting was less frequent than other activities at Steveston Landing. This low frequency was due to a deficiency in the number of benches, chairs and seating opportunities.

Secondary seating opportunities have not been designed in the open space at Steveston Landing. Although this open space appears to be developed generically, the opposite is the case. The emphasis of the design of the open space is focused on providing good circulation and opportunities to view the fishing boats and river from the boardwalk.

Primary Sitting on the Boardwalk accounted for only 12% of the activities at Steveston Landing. Although these benches are built in the same character and wooden materials as the boardwalk, and are double-fronting (in other words they have no back piece), they do not have the capacity to accommodate the large numbers of people seeking places to sit. In total, there are only nine benches located along the water-side of the boardwalk, as shown in Figure 6.49.
Figure 6.50 Steveston Landing: Standing stationary and eating frozen yogurt.
Figure 6.51 Steveston Landing: Primary sitting on the boardwalk benches with friend standing stationary close-by.

Figure 6.52 Steveston Landing: Leaning on the rail.
Four of these benches are located in the central portion of the boardwalk (where the boardwalk and ramp to the public fish sales dock meet); three are located in a node which extends out over the water at the east end of the boardwalk, and; two are located in a node which extends out over the water on the west end of the boardwalk. These benches are 6 feet in length and 2.5 feet in width. With people seated on both sides, these benches are able to seat 8 people per bench, for a total of 72 people on all boardwalk benches. This is a relatively small number of seats to accommodate the 500 or so people who occupy the space during peak hours.

As the benches reached capacity, people would sit closer together. In some instances, family members or friends would try to squeeze in an extra person or seat children on their laps. The deficiency in the provision of seating was evidenced by the number of people Standing Stationary next to the crowded benches, as explained in previous sections.

The frequency of Sitting on the Boardwalk numbers can be a misleading in that the 12% frequency, which seems low, does not point out that the benches were full during most observation periods, but was a result of few seating opportunities. This observation was recorded as a point-centered observation since it does not arise from the activity/behaviour data.

The instance of Sitting in the Plaza was even less than on the boardwalk. Sitting in the Plaza accounted for only 8% of the activities. There are two reasons for this low frequency. Firstly, there are very few seats in the plaza. Based on the same seating capacity assumptions as noted above, the plaza has the capacity to seat 24 people comfortably. During most observation periods, the seating was filled beyond capacity, as noted by how close people would sit together.

Secondly, portions of the plaza were in the shade during different times of the day. In the evening, after 5:30 p.m., the entire plaza was in the shade. As a result, people would only briefly sit on the benches and chairs, then would move to the boardwalk, where the sun was still shining. Some people would move the movable red chairs to the edge of the plaza, where it meets the boardwalk, to sit in the sun.

From the activity data, it was noted in Figure 6.59 (on page 208) that more people were Sitting in the Plaza on weekdays than on weekends. This appeared to be due to smaller food line-ups on weekdays, therefore freeing-up plaza space for more movable chairs to be
placed in the centre and edges of the plaza, where food line-ups might otherwise be located, as was largely the case on weekends (a trend which was reflected by the high frequency of Standing Stationary on weekends, shown in Figure 6.61 on page 210).

6.10.1.5 Active Activities and Children

Unlike Westminster Quay, Biking was a popular activity at Steveston Landing, accounting for 12% of all activities and being the next most frequent activity after Walking and Standing Stationary (as shown in Figure 6.48). There were as many as 60 bicycles parked along the rail and in the two bike racks at any given time (as shown in Figures 6.53 and 6.54). The high incidence of Biking was also reflected by the user survey data, which identified that 21% of the open space users surveyed had traveled to the site by bicycle. The high incidence of Biking was due to the fact that there are no level changes within the open space and the space benefits from excellent linkages with the street and the Richmond Trails System. Richmond is also relatively flat so Biking is a relatively easy activity. The user survey data also determined that almost half of the respondents had traveled four miles or less to access the site and that exercising was a purpose for going to the site. These people lived in the residential neighbourhoods in the vicinity of Steveston Landing.

Although Pushing Strollers (4%) experienced low frequencies relative to other activities, it was more frequent than at Westminster Quay. In fact on weekdays, the frequency of pushing strollers increased to 7% on average. These higher frequencies were probably a result of the excellent connections to the street and sidewalk with no level changes.

There was no playground at Steveston Landing, and therefore there were no frequencies of Kids Playing in the Playground or Adults Watching/Playing in the Playground. As well, there were no pieces of public art on which children could play or allow their imaginations to wander. However, the fish for sale on the fishing boats along the public fish sales dock provided lots of visual excitement for children and adults.
Figure 6.53

Steveston Landing: Many bicycles parked on the rail.

Figure 6.54  Steveston Landing: Bike racks are filled to capacity.
Figure 6.55 Steveston Landing: Walking dogs.

Figure 6.56 Steveston Landing: Pushing strollers.
Figure 6.57 Steveston Landing: Wheelchairing on the public fish sales dock.

Figure 6.58 Steveston Landing: Wheelchairing on the boardwalk.
6.10.1.6 **Wheelchairs and Walking Dogs**

Similar to Westminster Quay, the frequencies of Wheelchairing and Walking Dogs were low at Steveston Landing, relative to other activities. However, the frequencies of these two activities were higher at Steveston Landing than Westminster Quay, where they were almost non-existent. As shown in Figure 6.48, Walking Dogs and Wheelchairing each had frequencies of 2% at Steveston Landing. The frequency of Walking dogs increased from 1% to 2% on weekdays, especially in the late afternoon and evening observation periods. When the space was not crowded on weekdays, the frequency of wheelchairing rose to 3%.

6.10.1.7 **Groupings: Who Uses the Space**

Overall frequencies of groupings were calculated for all observation periods in order to determine who was using the open space at Steveston Landing. When ranked from most to least frequent, four trends of groupings were identified:

- Male/Female Pairs and Males/Females (combined) in Groups
- Females in Groups (of 2 or more)
- Singles (Male or Female)
- Males in Groups (of 2 or more)

6.10.1.8 **Singles**

In much the same way as Westminster Quay, Single Males and Single Females experienced moderate frequencies, as shown in Figure 6.62. There were more Single Males than Single Females: Single Males accounted for 15% of the groupings while Single Females accounted for only 10%. However, overall, the frequency of Singles was lower than at Westminster Quay. Added together, the total frequency of Single Males and Single Females equaled 25%, which was equivalent to the frequency of Male/Female Pairs and Males/Females (combined) in Groups, which were the dominant groupings.
Steveston Landing
Overall For All Observation Periods
Frequency of Groupings

Figure 6.62
### Steveston Landing
Overall For All Observation Periods
Frequency of Groupings

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Overall</th>
<th>Weekday Total</th>
<th>Weekend Total</th>
<th>Overall Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Males</td>
<td>20%</td>
<td>11%</td>
<td>15%</td>
<td>159</td>
<td>109</td>
<td>268</td>
</tr>
<tr>
<td>Single Females</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
<td>86</td>
<td>98</td>
<td>184</td>
</tr>
<tr>
<td>Males in Groups (≥2)</td>
<td>10%</td>
<td>6%</td>
<td>8%</td>
<td>78</td>
<td>56</td>
<td>134</td>
</tr>
<tr>
<td>Females in Groups (≥2)</td>
<td>18%</td>
<td>15%</td>
<td>16%</td>
<td>148</td>
<td>140</td>
<td>288</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>22%</td>
<td>30%</td>
<td>26%</td>
<td>174</td>
<td>292</td>
<td>466</td>
</tr>
<tr>
<td>Males/Females in Groups</td>
<td>20%</td>
<td>28%</td>
<td>24%</td>
<td>163</td>
<td>265</td>
<td>428</td>
</tr>
</tbody>
</table>

Figure 6.63
6.10.1.9 Male/Female Pairs

Male/Female Pairs were the most frequent grouping at Steveston Landing, accounting for 26% of groupings for all observation periods (as shown in Figures 6.26 and 6.27). This pattern is identical to that which occurred at Westminster Quay. The user survey data pointed out that the majority of Male/Female Pairs consisted of people between the ages of 26 to 35 years old. The next noticeable age group of Male/Female Pairs were between the ages of 36 to 45 and seniors over 65 years of age. However, these age groups each accounted for only about 12% of the survey respondents.

6.10.1.10 Groups

Males/Females (combined) in Groups had almost the same frequency as Male/Female Pairs, both being dominant groupings. Males/Females (combined) in Groups accounted for 24% of groupings for all observation periods (as shown in Figure 6.27). Together, Males/Females (combined) in Groups and Male/Female Pairs accounted for half of all groupings. The frequency of Males/Females in Groups was much higher at Steveston Landing than at Westminster Quay.

Females in Groups (of 2 or more) and Males in Groups (of 2 or more) had almost the same frequencies at Steveston Landing as at Westminster Quay, except that the spread between Females in Groups and Males in Groups was greater. In fact, since Females in Groups accounted for 16% of the groupings overall, they were ranked between the dominant groupings of Male/Female Pairs and Males/Females (combined) in Groups, and Singles.

On the other hand, Males in Groups were less frequent accounting for only 8% of groupings for all observations (as shown in Figure 6.27). Males in Groups were the least frequent grouping at Steveston Landing.

6.10.2 Weekend Versus Weekday Trends

In addition to the overall trends for all observation periods, various trends emerged from the data, when comparing weekday and weekend observations. The majority of these differences occurred in the walking and standing stationary activities. There were also differences in the groupings of people using the open space. Figure 6.59 compares the overall, weekday and weekend activities.
Comparison of Frequency of Activities Overall Versus Weekday and Weekend Steveson Landing
Steveston Landing
Weekday All Observation Periods
Frequency of Activities

Figure 6.60
The total number of activities for all observation periods at Steveston Landing was 3,851. Of this number, 2,142 activities took place during the weekend observation periods while 1,709 took place on weekdays. In relative terms, weekend activities accounted for 56% of all activities, while weekday activities accounted for 44%. The spread between the number of weekend and weekday activities was not as great as at Westminster Quay, where only one-third of the activities took place on weekdays. This small spread suggests that the space was consistently used on weekdays and on weekends, perhaps because it was located within easy walking and biking distance from nearby residential neighbourhoods, as was reflected by the user survey data which showed that almost half of the respondents had walked or bicycled to the site.

6.10.2.1 Activities

By comparing the frequency of individual activities on weekdays versus weekends, it was found that the dominant activities of Walking and Standing Stationary increased in frequency on weekends, while the least popular activities of Pushing Strollers, Walking Dogs and Wheelchairing decreased. The frequency of the moderately frequent activities of Sitting, Leaning on the Rail and Biking, remained almost constant. These trends are similar to that which occurred at Westminster Quay, except that the dominant activities were Sitting and Walking at Westminster Quay.

6.10.2.2 Sitting

The frequency of Sitting remained almost constant on weekdays and weekends, as shown in Figures 6.59, 6.60 and 6.61. Primary Sitting on the Boardwalk slightly decreased from 13% to 11% frequency on weekends. Primary Sitting in the Plaza also slightly decreased from 9% to 8%. These decreases occurred because the activities of Walking and Standing Stationary became more frequent on weekends. This trend is consistent with the observation that as the seats became congested, more people were forced to stand.

Since there were no secondary seating opportunities on the boardwalk or in the plaza (other than sitting on the ground), there were no frequencies of Secondary Sitting at Steveston Landing.
6.10.2.3 Walking

Walking, which was the most popular activity at Steveston Landing, increased in frequency on weekends. Walking on the Boardwalk increased from 17% to 23% on weekends, while Walking in the Plaza increased from 9% to 11%. In both cases, the increase in the frequency of walking reflected the larger numbers of people using the space on weekends. As illustrated in Figure 6.61, there were almost twice as many walkers on the boardwalk than in the plaza, which suggests that the majority of the people preferred to walk close to the water's edge, on the boardwalk in the sunlight, rather than in the often shaded plaza. Also, participant observations found that people would walk through the plaza to access the boardwalk, whereas people on the boardwalk would slowly stroll along while enjoying the waterfront view of the river and fishing boats.

6.10.2.4 Passive Activities

As mentioned in previous sections, the frequency of Standing Stationary almost doubled on weekends, rising from 13% to 21% (as shown in Figures 6.59, 6.60 and 6.61). This increase was reflected in the larger number of people using the space on weekends and the many people who could not obtain seats and would end up standing.

Leaning on the Rail slightly decreased in frequency from 13% to 10% on weekends. Participant observation discovered that as the space became busy with people Walking on the Boardwalk on weekends, there was less room along the rail for people to lean. Also, bikes parked along the rail took valuable leaning space away from rail leaners.

6.10.2.5 Active Activities

Biking, which was much more frequent at Steveston Landing than at Westminster Quay, remained almost constant in frequency on weekdays and weekends (as shown in Figure 6.59), accounting for between 12% and 13% of all activities. This consistency suggests that people would ride their bikes to the site regardless of how busy the site was. The user survey questionnaire data determined that almost half of the people at Steveston Landing had traveled less than 4 miles to access the site and 21% traveled to the site by bicycle. Forty-three percent replied that exercising was a major purpose for attending Steveston Landing. On weekends and weekdays, many bikes were parked in the bike racks and along the boardwalk rail.
The other active activities of Wheelchairing and Walking Dogs, which were of low frequency on weekdays became even less frequent on weekends. This trend was identical to that experienced at Westminster Quay. However, the frequencies of these two activities were greater at Steveston Landing than Westminster Quay on both weekdays and weekends. At Steveston Landing, the frequency of Wheelchairing decreased from 4% to 2% on weekends, while Walking Dogs decreased from 3% to 2%. These decreases suggest that as the space became filled with people waking and standing stationary on weekends, wheelchairers and dog walkers were faced with various obstacles and became displaced from the space.

6.10.2.6 Activities Involving Children

The frequency of Adults Pushing Children in Strollers decreased dramatically from 7% to 2% on weekends (as shown in Figures 6.59, 6.60 and 6.61). This decrease was probably for the same reasons as the decrease of Wheelchairing and Walking Dogs on weekends.

Since there was no playground at Steveston Landing, there were no frequencies of Kids Playing in the Playground or Adults Watching/Playing in the Playground.

6.10.2.7 Groupings

The frequency of groupings varied immensely between weekdays and weekends. On weekdays, Single Males and Females in Groups (of 2 or more) shared almost the same frequencies with Male/Female Pairs and Males/Females (combined) in Groups. However, on weekends, the frequency of Single Males sharply declined, as did Males in Groups (of 2 or more) and Females in Groups, while the frequency of Male/Female Pairs and Males/Females (combined) in Groups increased to become the dominant groupings. These trends are depicted in Figure 6.64.

6.10.2.8 Singles

Similar to Westminster Quay, the number of Singles decreased on weekends. However, at Steveston Landing, the decrease in the frequency of Single Males, from 20% to 11% on weekends, was much greater than at Westminster Quay. The frequency of Single Females remained almost unchanged by decreasing from 11% to 10% on weekends.
Figure 6.64

Steveston Landing
Overall Versus Weekday and Weekend
Comparison of Frequency of Groupings
Steveston Landing
Weekday For All Observation Periods
Frequency of Groupings

Figure 6.65
Steveston Landing
Weekend For All Observation Periods
Frequency of Groupings

Figure 6.66
On average, there were less singles at Steveston Landing on weekdays and weekends than at Westminster Quay. As the frequency of Singles decreased at Steveston Landing, the frequency of Male/Female Pairs and Males/Females (combined) in Groups dramatically increased.

6.10.2.9 Male/Female Pairs and Groups

The frequency of Male/Female Pairs and Males/Females (combined) in Groups greatly increased on weekends. Together, these groupings dominated the space on weekends and overall, but shared similar frequencies with Single Males and Females in Groups (of 2 or more) on weekdays. Couples increased from 22% to 30% on weekends while Males/Females (combined) in Groups increased from 20% to 28%.

The reverse trend was the case for Females in Groups and Males in Groups which both decreased on weekends. Females in Groups, which shared dominance on weekdays (with Male/Female Pairs, Males/Females in Groups and Single Males) decreased from 18% to 15% on weekends. The drop in Males in Groups was even greater, from 10% to 6% on weekends. These decreases suggest that as more Male/Female Pairs and Males/Females (combined) in Groups inhabited the open space, less Males in Groups (of 2 or more) and Females in Groups (of 2 or more) used the space.
6.11 Summary

Numerous lessons were learned from the Steveston Landing case study. The scale of Steveston Landing is much smaller than Westminster Quay and as a result, a similar open space to that at Westminster Quay has been created, but in a much more concentrated space. The most beneficial aspect of the Steveston Landing waterfront open space is its close proximity and linkages to the street and adjacent pedestrian systems, which connect the site with various Richmond residential neighbourhoods.

Similar to Westminster Quay, the Steveston Landing site historically accommodated a working waterfront based on the commercial fishing and cannery industries. However, unlike in New Westminster, the small scale redevelopment of Steveston Landing has displaced only a small portion of the waterfront from the water-dependent fishing and cannery industries. The remainder of the Steveston waterfront continues to be the location of many active canneries and the berths for much of the Pacific commercial fishing boat fleet.

The process of change and redevelopment was initiated by one owner: the federal government of Canada. The terms of reference tendering the redevelopment of the site included specific requirements that development proposals include a 20 foot waterfront boardwalk along the water's edge, and a public fish sales dock in front of the redevelopment. Steveston Landing Developments, a private company, who currently manages the site, won the tender and redeveloped the site to its current use and form. The federal government retains ownership of the site, while Steveston Landing Developments controls the site through lease agreements. This process, whereby one large government owner owns and manages the redevelopment of a waterfront site is highly effective at achieving public access to the water's edge and creating an exciting waterfront open space.

Over the past five years, the City of Richmond has adopted various policies regarding public pedestrian access to the waterfront and environmental concerns. These policies provide very general conceptual guidelines regarding how the water's edge should be developed, with rip-rap, inter-tidal benches, development-free setback zones and public boardwalks and piers which hang over the natural edge. However, they provide little guidance on how waterfront open spaces should be designed and what uses they should accommodate.
Steveston Landing had excellent pedestrian access, free from level changes and well-linked to the street, sidewalks, Richmond Trails system and downtown Steveston. The success of these linkages was reflected by the large numbers of people who walked or rode bicycles from nearby residences, to get to Steveston Landing. The majority of these people had traveled less than 4 miles to get to the site, as was discovered by the user survey data.

As at Westminster Quay, the waterfront open space is dominated by two overall design features: the boardwalk and the plaza. The public sales dock, located in front of the open space (on the water), acts as a third major design feature, which draws people through the plaza and boardwalk, to the water's edge. The boardwalk provides the edge along the waterfront, while the plaza acts as a linkage through the buildings from the street-end (at the foot of Second Avenue) to the waterfront boardwalk and public fish sales dock beyond. The land-based plaza is surfaced with concrete, a solid material, while the water-based boardwalk is surfaced wood, a soft material. Since there are no level changes, steps or landscaping to provide boundaries and transitions between the boardwalk and plaza, the concrete and wood surface materials are intermixed at the centre of the open space, where the two meet. The resulting pattern on the floor takes the shape of a circular star, which draws people to its centre and allows them to feel as though they are passing through the centre of two different but connected spaces.

Two-sided, double width wooden benches are located along the waterside of the Boardwalk in alcoves protruding out over the water, so that walking circulation is not congested by people occupying these benches. There are also two benches in the centre of the plaza. However, these benches are placed perpendicular to the flow of people through the plaza, and thus cause congestion. There are no movable chairs or secondary seating opportunities in the public open space. Overall, there are not enough benches to service the many people who seek places to sit, as was reflected by the low frequencies of seating in the activity data and the frequently congested benches. As a result, many people are forced to remain standing since there is often nowhere to sit.

Lighting, street furniture and signage are consistent in theme, colours and materials with the cannery/fishing boat theme and character of the open space and buildings. However, the standard exposed aggregate concrete garbage receptacles and the small half-barrel planters seem out of place, and do not complement the theme. The lighting, although dim at night, is sufficient, and add to the old cannery ambiance of the space at night. Other than the half-barrel planters (which appear to be a mitigative measure added to the site after
redevelopment occurred) and a few hanging flower baskets, hanging from the overhead lamp standards, there is no other landscaping. Nowhere is there any permanent landscaping in solid planters. However, because of the small scale and cannery character of the space, it does not appear necessary to have permanent landscaping. Although there is no landscaping or trees, the orientation of buildings creates shade in different portions of the plaza throughout the day. Without the protection of trees, wind rushes through the plaza, which acts as a wind tunnel on windy days.

Under the boardwalk, a reconstructed dyke, built of medium-sized rip rap stabilizes the foreshore and provides a habitat for fish, birds, vegetation and wildlife. This dyke treatment conforms to the rigorous City of Richmond and FREMP environmental policies and criteria for waterfront redevelopment.

As at Westminster Quay, walking was the dominant activity at Steveston Landing, as determined by the activity data and behaviour observations. Linkages to adjacent pedestrian systems allowed large volumes of walking to occur. Also, the parallel orientation of the boardwalk wooden planks to the water's edge, created a linearity that invited people to walk along the boardwalk. Unlike Westminster Quay, sitting was only a moderate activity, due to the small supply of seating at Steveston Landing. As a result, Standing Stationary was a dominant activity, closely followed in frequency by Leaning on the Rail. Biking was also very popular at Steveston Landing as reflected by the activity data and the many bicycles seen parked in the bike racks and along the waterfront rail at all times during the day.

From the user survey data, the most popular purposes for coming to Steveston Landing reported were to exercise, to view the river and to see the fish. The high frequencies of to exercise and to see the river were consistent with purposes at Westminster Quay. The purpose to exercise was also noted by almost half of the people who used pedestrian means to access Steveston Landing. The public fish sales dock and many fishing boats allowed viewing the fish to be a purpose at Steveston Landing as well as enhancing the theme and character of the open space.

Since there is no playground or public art at Steveston Landing, there were no frequencies of children's activities. There were however, many adults pushing children in strollers, especially on weekdays, when the space was less congested.
Most of the people using the space had traveled less than 4 miles to get to Steveston Landing, and lived in nearby residential neighbourhoods in Richmond. These same people were the ones who had walked or bicycled to the site. There were also people using the space who had traveled to the site from Vancouver and the North Shore by automobile. Some open space users were tourists who were visiting from foreign countries. The majority of the users were between the ages of 26 to 35. The next most noticeable group of users were the seniors between the ages of 65 to 74.

The demographic profile statistics identified that a critical residential population mass exists in the vicinity of Steveston Landing, and that the majority of these people live in single family detached houses in either male/female pairs or families with children. The grouping data showed that Male/Female Pairs and Males/Females (combined) in Groups dominated the space overall, but that there were also many Females in Groups (of 2 or more) and Single Males. The dominance by Male/Female Pairs and Males/Females (combined) in Groups and the slightly larger number of Single Males than Single Females was the same trend as was experienced at Westminster Quay.

The Steveston Landing case study provided an excellent alternative example of redeveloped urban waterfront open space to Westminster Quay, since there were various similarities and differences between the design and use of the two spaces. As well, by comparing the two sites, other factors which impact use, such as site access, critical residential mass and demographic characteristics were discovered.
Chapter Seven

Implications and Design Principles
7.0 Implications and Design Principles

This chapter summarizes the results of previous chapters by comparing the activity and user survey questionnaire data for the case study sites. In response to these summaries, a series of design principles are presented which synthesize the lessons learned from the case studies and the urban design literature.

7.1 Comparison of the Case Studies

From the behavioural activity data, demographic profiles and user survey analysis for the two case study sites, various trends identified similarities and differences between the two sites. These trends provided insights as to why people visit the water's edge, what activities people undertake at the water's edge, and when the majority of these activities take place. In addition, the user survey data and grouping observations identified who was using the waterfront open space, how far these users traveled to get to the space and how they accessed the space.

To understand these trends, clues were sought by examining the location, physical setting, history, policy and land use context, transportation and access to the sites, and elements of design for each site. These clues are referred to throughout the chapter.

7.1.1 How the Spaces Were Used: The Activity Data

Analysis of the activity data for the case studies revealed overall trends. The overall frequencies of the different activities taking place at each of the case studies appear in figures 7.1 and 7.2.

7.1.1.1 Overall Trends

By ranking the most frequent to least frequent activities, it was apparent that the most popular activities were different for the two case study sites. At Westminster Quay, Sitting and Walking on the Boardwalk and in the Plaza area, were the most popular activities. Although there was no primary seating on the boardwalk, there were many secondary seats along the planter ledge bench flanking the boardwalk. The passive activities of Leaning on the Rail and Standing Stationary were of medium frequency while the active activities of Biking, Wheelchairing and Walking Dogs as well as activities involving children were least frequent. Although the Expo Tugger playground was often occupied by at least two
children with one or two adults watching over, there were many more people performing other activities such as Walking and Sitting, therefore reducing the relative frequency of children's activities in the playground.

At Steveston Landing, the ranking of activities was different. Walking on the Boardwalk and Standing Stationary were the dominant activities closely followed by Biking and Leaning on the Rail. Sitting and Biking were of medium frequency. The least frequent activities were Pushing Strollers, Wheelchairing and Walking Dogs. Since there is no playground at Steveston Landing, there were no frequencies for Kids Playing in Playground and Adults Watching/Playing in Playground.

Biking was more frequent at Steveston Landing, as noted by 12% of the activities for all observation periods while at Westminster Quay, Biking was infrequent (only 2% of overall activities). The high incidence of Biking at Steveston Landing was a result of excellent access and linkages between the site and the Richmond Trails System. As well, a critical mass residential population lives within five miles from Steveston Landing. The flatness of Richmond's topography provides incentive for people to ride their bicycles to Steveston Landing rather than drive their cars.

On the other hand, Westminster Quay experienced low frequencies of Biking, even on weekends. These low frequencies were the result of poor access to the site for bicyclists. The railway lines which separate the waterfront and Westminster Quay from the remainder of New Westminster provide a barrier to access. There are only three railway crossings in the vicinity of Westminster Quay. The pedestrian overpass (at the foot of Eighth Street, near Hyack Square) has too many steps for bicyclists to carry their bikes over. The automobile overpass to the west of the site has a steep slope for cyclists climb and the at-grade crossing at the foot of Begbie Street has no sidewalk or bike lane, but dangerously mixes pedestrians, bicycles and cars. Bicycles also risk getting their tires caught in the railway tracks.

The passive activities of Standing Stationary and Leaning on the Rail were much more frequent at Steveston Landing than Westminster Quay. There were two reasons for this trend. Firstly, there was a lack of seating opportunities at Steveston Landing as reflected by the total of Primary Sitting in the Plaza and Primary Sitting on the Boardwalk combined, which accounted for 20% of all activities. Seats here were often fully occupied and congested.

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Frequency of Activities Overall For All Observation Periods Steveston Landing
As a result, many seat seekers would ended up standing. Standing Stationary was also due to line-ups to purchase food at the window-style food shops. The most prevalent of these shops was the frozen yogurt store, where as many as 35 people could be seen lining-up at any given time. Line-ups provide an excellent opportunity for people watching and spontaneous conversation amongst strangers. Whyte calls this condition "triangulation".

At Westminster Quay, there were many more seating opportunities along the planter ledge benches (flanking the boardwalk) and in the movable bistro chairs in the plaza, as reflected by Primary Sitting in the Plaza and Secondary Sitting on the Boardwalk, which together accounted for almost half (45%) of all activities. As well, since the public market building is close-by (only about 40 feet from the water's edge, abutting the plaza) with food outlets located indoors, people would line-up to purchase food inside the market rather than in the outdoor open space. If seats are not available outside, there are opportunities to sit in one of the many seats located in the market, especially in the food fair on the second floor or the outdoor deck next to the food fair.

Walking was a popular activity at both of the case study sites, accounting for approximately one-third of activities at each. The boardwalk at Steveston Landing and the Esplanade boardwalk at Westminster Quay provided excellent mediums for walking. The surface of the boardwalks are of wooden planks protruding out over the water's edge, giving people a sense of being close to the water but safe from falling in (since the rail holds people back). In the case of Steveston Landing, the boardwalk connects to the Richmond Trails System.

At Westminster Quay, the Esplanade connects to the parking lot of the market on the east and the medium density waterfront residential communities on the west, therefore providing people who drive to the site with a place to stroll along the waterfront, and residents with a pedestrian linkage to the market. At both case study sites, the plaza provides a transition passageway through which people pass to access the waterfront open space from the street, market or parking lot. Anyone who uses these two open spaces must walk on either the boardwalk or the plaza in order to access and move through the waterfront open spaces.
7.1.1.2 Weekend Versus Weekday Trends

There were also similarities and differences in the various weekday and weekend trends for the two case study sites. Two-thirds (66%) of the activities took place on weekends at Westminster Quay. This trend was not as noticeable at Steveston Landing, where 56% of the activities occurred on weekends.

Seating trends were much different at the two sites. Primary Sitting in the Plaza decreased from 36% to 16% on weekends, while Secondary Sitting on the Boardwalk increased from 15% to 25% at Westminster Quay. Therefore the dominant location of seating activity shifted from the plaza to the boardwalk on weekends. At Steveston Landing, the sitting activities (which consisted only of Primary Sitting on the Boardwalk and Primary Sitting in the Plaza) remained constant on weekdays and weekends. Primary Sitting on the Boardwalk accounted for about 12% of all activities, while Primary Sitting in the Plaza accounted for about 8%. In much the same way that Westminster Quay experienced more seating activity on the boardwalk on weekends, Steveston Landing did for all observations periods.

Walking activities remained constant on weekdays and weekends at Westminster Quay, consistently dominating all activities. At Steveston Landing, Walking in the Plaza remained constant, but Walking on the Boardwalk dramatically increased from 17% to 24% on weekends. As the seats became filled at Steveston Landing, more Walking on the Boardwalk occurred. Although Walking in the Plaza was a moderately frequent activity at Steveston Landing, Walking on the Boardwalk dominated all activities on weekends and weekdays.

Biking experienced moderate frequencies on weekdays and weekends at Steveston Landing, accounting for about 12% of all activities. On the other hand, Biking was almost non-existent at Westminster Quay. Other active activities such as Wheelchairing and Walking Dogs slightly decreased in frequency at both sites on weekends. On weekends, frequency of these activities was almost 0% at Westminster Quay. As more walkers occupied the open space, Wheelchairers and Dog Walkers were displaced.

Standing Stationary increased in frequency at both sites on weekends. At Westminster Quay, the increase was from 5% to 10%, while at Steveston Landing, the increase was
from 13% to 21% to become a dominant activity. As seats became filled, Standing Stationary became more popular on weekends.

The frequency of Kids Playing in the Playground, Adults Watching/Playing in the Playground and Pushing Strollers remained constant at Westminster Quay on weekends and weekdays. At Steveston Landing, because there was no playground, there were no frequencies of Kids Playing in the Playground or Adults Watching/Playing in the Playground. However, unlike at Westminster Quay, the frequency of Pushing Strollers decreased from 7% to 2% on weekends at Steveston Landing. This decrease was most likely for the same reasons that Wheelchairing and Walking Dogs decreased on weekends.

7.1.2 User Survey Questionnaire Data

User survey questionnaire responses also yielded similarities and differences. Summaries of the responses to each of the questions asked in the survey identified these similarities and differences.

7.1.2.1 Who Used the Spaces

Although the sample size was small, a diagnostic indication of who used the waterfront open spaces was established by the user survey results. From the survey responses it was found that at Westminster Quay, the dominant age group of users were people between the ages of 26 to 35 years. These people accounted for 42% of the survey respondents. Of these people, 76% were females and only 24% were males. The next largest group were senior citizens over the age of 75 accounting for 23% of respondents, and between the ages of 66 and 74 accounting for 19% of respondents. If these two age groups are added together, 42% of the users were over the age of 65. Only 3% of the respondents were between the ages of 36 to 45.

At Steveston Landing, most of the respondents were also between the ages of 26 to 35, as represented by 58% of respondents. Unlike at Westminster Quay, 57% of this age group were males and 43% were females; presenting a more equitable balance of males and females. Similar to Westminster Quay, the next largest group of respondents were senior citizens between the ages of 66 to 75 (as represented by 18% of respondents). There were no respondents over the age of 75 at Steveston Landing and only 12% were between the ages of 36 to 45.
The number of respondents between the ages of 56 to 65 was much higher at Westminster Quay (as represented by 13% of respondents), than at Steveston Landing (as represented by only 3%). On the other hand, while 9% of respondents were between the ages of 46 to 55 at Westminster Quay, there were almost no respondents in this age group at Steveston Landing. It should be noted that questionnaire respondents were randomly selected and that children and youths were not included in the sample (as mentioned in earlier sections).

7.1.2.2 Distance Traveled to Access Waterfront Open Space

Overall, people using the open space at Steveston Landing had traveled shorter distances from their residences to access the site, than had the people using Westminster Quay. At Steveston Landing, almost half (42%) of the respondents had traveled less than 4 miles to get to the site. Of these people, 29% traveled 2 to 4 miles and 16% traveled 0 to 2 miles. These large numbers were made possible by the critical mass residential populations in the direct vicinity of Steveston Landing. On the other hand, at Westminster Quay, only 18% traveled 0 to 2 miles and none traveled 2 to 4 miles. Almost all of these people lived in the adjacent Westminster Quay waterfront residential neighbourhoods.

The majority of respondents at Westminster Quay had traveled 5 to 10 miles (as represented by 47% of respondents) or 11 to 30 miles (as represented by 35% of respondents). As will be seen in following sections, most of these people accessed the site by automobile and lived in adjacent municipalities. At Steveston Landing, only 14% had traveled 5 to 10 miles and 33% had traveled 11 to 33 miles. As at Westminster Quay, most of these people had traveled to the site by automobile from other municipalities.

There were very small numbers of people who had traveled greater than 31 miles to access either of the waterfront open spaces. At Steveston Landing, 8% of the respondents fell into this category and reported that they were tourists visiting Canada from other countries.

7.1.2.3 Mode of Transportation Used to Access Waterfront Open Space

The mode of transportation responses replicated the distance traveled data by identifying that the majority of Westminster Quay respondents had accessed the site by automobile, while many of the Steveston Landing respondents had accessed the site by pedestrian means (either walking or bicycling). At Steveston Landing, 25% had bicycled to the site.
and 21% had walked. These are the same people who had traveled less than 4 miles to access the site.

At Westminster Quay, 52% had accessed the site by automobile while only 12% had bicycled and 18% had walked. The people who had walked were the same people who reported they traveled less than 2 miles to access the site, and lived in the waterfront residential neighbourhoods. The people who had driven automobiles to the site were the same people who had reported traveling over 5 miles to access the site. Therefore, it appeared that the nearby residential neighbourhoods and pedestrian linkages between the open space and these neighbourhoods affected the number of people who had accessed the site by pedestrian means.

As a result, many people had traveled to Steveston Landing on foot or by bicycle; while at Westminster Quay, only people who lived in the waterfront residential neighbourhoods, connected to the open space by the Esplanade boardwalk, had walked to the site. Due to poor and unsafe at-grade pedestrian linkages to the rest of New Westminster caused by crossing the railway tracks, few pedestrians had walked or bicycled to Westminster Quay from outside the waterfront neighbourhoods. The majority of Westminster Quay respondents had traveled to the site from adjacent municipalities by automobile. The large parking lots to the east of the Quay, accommodated these auto travelers.

Nobody reported taking public transit buses to access either of the sites. Only 3 people traveling to Westminster Quay from Surrey reported riding SkyTrain.

7.1.2.4 Where Users Came From: Municipality of Residence

The municipality of residence responses were consistent with the distance traveled and mode of transportation results. At Steveston Landing, almost half (42%) of the respondents lived in Richmond and had traveled less than 4 miles to get to the site. The majority of the remainder had come from Vancouver (26%) or the North Shore (16% from North Vancouver and 8% from West Vancouver). Only 8% had come from Burnaby and almost none from other southern and eastern Lower Mainland municipalities. The remaining 8% of respondents were tourists visiting from other countries.
The pattern at Westminster Quay was much different and reflected the large number of automobile users who had driven more than 5 miles to access the site. Only 17% of the respondents lived in New Westminster. These people were the ones who lived in the waterfront residential neighbourhoods and had walked to the open space. 17% of the respondents were from the City of Vancouver. The remaining 48% lived in neighbouring municipalities. There appeared to be two sub-groups of neighbouring municipalities of residence. The first sub-group included Surrey, in which 18% of the respondents lived and Coquitlam, in which 18% also lived. The second sub-group included Burnaby and Delta, in which 6% lived in each respectively. Another 18% had driven-in from Langley. Almost all of the respondents included in these two sub-groups reported that they had traveled to the site by automobile. There were only 3 people from Surrey who had taken SkyTrain.

7.1.2.5 Number of Trips to the Waterfront Open Space

At both sites, approximately one-quarter of the respondents reported they attended the site 1 to 5 times per year on average. There were slightly more of these people at Steveston Landing (29%) than at Westminster Quay (23%).

However, the number of respondents who attended the site frequently, meaning over 50 times per year, was noticeably larger at Steveston Landing. Here, 17% reported attending the site 50 to 99 times per year, and 13% attended over 100 times per year. On the other hand, only 12% of the Westminster Quay respondents attended Westminster Quay 50 to 99 times per year, and less than 5% attended over 100 times per year. In both cases, the people who attended the sites more frequently were the ones who lived close-by and had walked to the sites.

The majority of the people at Westminster Quay attended the site between 6 and 24 times per year. Broken down, 18% attended 6 to 10 times per year, and 23% attended 11 to 24 times per year. Very few (only 9%) of the Steveston Landing respondents attended 6 to 24 times per year. Westminster Quay also had more people who had come to the site once in every 5 years (18% of respondents). Only 4% of the Steveston Landing respondents attended once in every 5 years. However, Steveston Landing also had a few people who had come to the site for the first time. The majority of these respondents were tourists visiting from abroad.
7.1.2.6  Reasons for Coming to the Waterfront Open Space

Responses to the purpose for trip question yielded various parallels between the case study sites. Respondents were able to provide multiple responses to this question.

At both sites, many people responded that they came to the waterfront to exercise and view the river. At Westminster Quay, 47% came to exercise and 35% to view the river. Similarly, at Steveston Landing, 43% came to exercise and 43% to view the river. These were clearly the dominant purposes and are consistent with the activity data which demonstrated walking as the dominant activity and leaning on the rail as moderately popular at both sites.

Meeting friends was also a consistent purpose at both sites as reported by 18% of the respondents at each site.

The remainder of purposes were much different for the two sites. 20% of the Steveston Landing users replied that to view the fish (for sale at the public fish sales dock) was a reason for coming to the site. Although very few of the many people who traveled down the ramp to the public fish sales dock to see the fish did not actually purchase fish, the public fish sales dock acted as a destination which attracted peoples' attention. On the other hand, nobody at Westminster Quay reported they had come to the site to see the fish, because there were no fishing boats or fish to see.

Twenty-nine percent of the Steveston Landing respondents also stated that shopping was a reason for attending the site. Many of these people added that they were shopping for fish. On the contrary, although Westminster Quay had a large public market next to the waterfront open space, only 18% reported that they had come to Westminster Quay to shop. It would therefore appear that these people came to the site to enjoy the river and open space, rather than to shop.

As reflected by the large number of shops in the market which sell food, 47% of the Westminster Quay respondents also included eating as a major purpose (although they did not consider this shopping). At Steveston Landing, where there was frozen yogurt, espresso coffee, sushi and fish and chips available at window counters open to the plaza, only 20% of the users reported eating as a reason for coming to the site.
Relaxing was also a popular purpose at Westminster Quay, as answered by 29% of the respondents. Only 13% reported this purpose at Steveston Landing. However, twice as many people noted people watching as a purpose at Steveston Landing (14% of respondents) than at Westminster Quay (6% of respondents).

Six percent of the people said that entertaining children was a reason for using the open space at Westminster Quay. Although this number is small, it is consistent with the activity data and participant observations which identified Kids Playing in the Playground and Adults Watching/Playing in the Playground as activities occurring in the open space. These people all said that the Expo Tugger playground captured the interests of their children and they could watch their children play without visual barriers, therefore instilling a sense of safety. There were no reports of entertaining children as a purpose at Steveston Landing. This is most likely because there was no playground or public art on which to play.

7.1.3 Summary

Overall, the user survey questionnaire responses were consistent with the activity data. Together, these two data sets established the basis for comparison of the two sites and provided insights regarding why people visit waterfront open space, who uses waterfront open space, what activities people enjoy at the water's edge and how people access waterfront open space. Throughout the section, reasons for the trends were identified by referring to the location, physical setting, history, policy and land use context, transportation and access to the sites, and elements of design of the spaces. The following section further summarizes these trends by presenting a series of design principles which reflect the lessons of the case studies and urban design literature and provide design strategies for the development of future urban waterfront open spaces.
7.4 Design Principles

As a result of the case studies, various trends and issues regarding the use and design of public open space at the water's edge in urban waterfront redevelopments were identified. Following are a series of design principles which address these trends and issues in order to provide the basis for future enquiry and establish design strategies for the development of future waterfront open spaces.

These principles could be encouraged during the municipal development review process or implemented privately by developers of the space through registered building schemes charged on property titles. The former is preferable, since it would provide public involvement in the development process and allow for continuity with other municipal (or otherwise) planning policies and guidelines.

At the current time, it would be premature for municipal development review processes to implement such design principles in a regulatory or guideline manner. However, it is anticipated that the findings of this thesis and its associated design principles will act as a catalyst for further academic enquiry regarding the design and use of waterfront open space. As further studies on this topic occur, design guidelines or other implementation strategies may be found to be ways of achieving the development of successful urban waterfront open spaces.

The design principles are sorted by major topic followed by sub-topics within. It should be noted that these design principles are conceptual in nature and address only the trends and issues discovered in the case studies and from the literature regarding the design of urban open space.

Each design principle is presented in a brief statement, noted in italics, followed by a summary explanation which suggest strategies for achieving the principle. In some cases, a sketch is included in the summary. The explanation and implementation strategies are followed by brief statements of rationale, which discuss reasons for establishing the principle.
DESIGN PRINCIPLES FOR THE DEVELOPMENT OF WATERFRONT OPEN SPACE
Design Principles for the Development of Urban Waterfront Open Space

7.2.1 Overall Design Features

Waterfront open space in urban waterfront redevelopments should include a series of spaces with individual identities which are tied together by a consistent theme and character.

These spaces could include Boardwalks or other waterfront pathways that accommodate active uses parallel to the water's edge, or Plazas, which accommodate passive uses and provide a transition and connection between the waterfront, Boardwalk and adjacent buildings and city.

Explanation and Implementation Strategy

As waterfront areas redevelop and open space opportunities are created through the dedication of park land along the water's edge, buildings containing a mixture of uses are often developed adjacent and inland of the park land strip. As a result, the open space becomes compacted between the water's edge and the development. In order to create exciting and yet useful spaces within this medium, design features should accommodate both active and passive activities. At the same time, the open space should provide a transition between the built form edge and the waterfront. To accomplish this challenge, the following features are encouraged:

1) **Plazas** - to provide connections between adjacent development and space for passive activities such as sitting.

2) **Boardwalks** - to parallel the water's edge and provide a medium for active activities such as walking, jogging and biking.

Rationale

In both the case studies, two overall design features were present in the waterfront open spaces; the Plaza and the Boardwalk. The Boardwalks, which paralleled the water's edge, provided the closest people could get to the water's edge. At the waterside edge of the Boardwalks were the rails along which people would lean as they gazed out to the water and its activities and environment. The Boardwalks were built of wooden planks extending out over the natural foreshore. The wooden forms, materials and colours enhanced the waterfront character, and allowed people to safely stand out over the water's edge.

The Plazas provided a transition space between the upland built form edge and the water's edge along the Boardwalk, and acted as a space through which people would pass to access the Boardwalk and waterfront. Plaza areas were surfaced with concrete and exposed aggregate, establishing a firm land-base to the waterfront open space.

Between the Boardwalks and Plazas were boundaries and transitions such as level changes, landscaped planters and changing surface materials, which linked the two spaces, but enhanced the individual identities of the different spaces. Boundaries and transitions are discussed in subsequent guidelines.
Figure 7.3 Boardwalk and Plaza, Plan View

Figure 7.4 Boardwalk and Plaza, Section View
7.2.2 Access and Circulation

7.2.2.1 Linkages

Pedestrian linkages which provide at-grade public access between waterfront open space and adjacent neighbourhoods, pedestrian pathways, road and sidewalk networks and public transit should be encouraged.

These linkages should allow for easy access to waterfront open space for all pedestrians including the physically challenged, bicyclists, senior citizens and people pushing children in strollers.

Explanation and Implementation Strategy

Waterfront open space should be available for the enjoyment of all people. To allow access to such open space for all people, barriers to access should be reduced to a minimum. To accomplish this task, the following are encouraged:

1) Pedestrian systems within the open space should connect with existing networks outside of the space.

2) Level changes should be reduced to a minimum, in order to allow access for wheelchairs, bicyclists, seniors, physically challenged people and people pushing children in strollers.

3) Where level changes are necessary, ramps with a shallow slope should be implemented to accommodate the above-noted people.

4) Where necessary, at-grade railway crossings should incorporate a dedicated pedestrian crossing space which is separated from the automobiles by bollards or other means and the gap between the rails and ground surface should be reduced to a minimum so that bikes and wheelchairs do not get stuck in the rails.

5) Surface materials should not cause difficulties to travel over. Boards on Boardwalks should be placed together such that people do not get stuck in the cracks.

6) Crosswalks, pedestrian-controlled streetlights and other provisions to allow safe pedestrian crossing of streets adjacent to the open space should be encouraged.

7) Gateways using signage and/or boundaries and transitions such as change in surface materials, landscaping or public art should be encouraged to provide a transition between the neighbouring areas and the waterfront open space. These gateways should include elements such as colour, materials and forms, which reflect the maritime character and history of the waterfront space.

Rationale

From the case studies, it was found that although current municipal policies mention pedestrian connections and public access to the waterfront, they do not elaborate on how this could be achieved. It was discovered that at Westminster Quay, the railway caused a barrier to pedestrian access which had not been dealt with effectively. The pedestrian bridge over the railway, connecting the waterfront open space to the core of downtown New Westminster had many stairs which created a barrier for physically challenged people, senior citizens, bicyclists and people pushing children in strollers. The at-grade railway crossing provided no safety for pedestrians to be separated from the automobiles. As a result, there were only limited numbers of these types of people using the open space at Westminster Quay.
On the other hand, at Steveston Landing, where there are no level changes and the Boardwalk and Plaza link with the Richmond Trails System and the road and sidewalk networks, there were almost no barriers to pedestrian access and many bicyclists, people in wheelchairs, people pushing children in strollers and other pedestrians achieved barrier-free access to the waterfront open space.

**Figure 7.5 Pedestrian Linkages and Integration of Street**

### 7.2.2.2 Integration of Street

*Opportunities to integrate street-ends with the waterfront open space should be encouraged and efficient and safe access for automobiles and emergency vehicles to adjacent off-street on-site parking areas should be established.*

**Explanation and Implementation Strategy**

Many streets terminate at the waterfront. Often, these street-ends can provide wonderful linkages between the city and its waterfront. It is important that a balance is achieved whereby street-ends are integrated with adjacent waterfront open space using boundaries and transitions such as similar surface types, knock-down bollards, etc. Since in most waterfront redevelopment projects, the waterfront is comprised of pedestrian oriented open space, it is important that this transition area determines where the automobile realm ends and the pedestrian realm begins; keeping in mind that visual access of the waterfront for automobiles and the city should be maintained.

It is also important that adequate automobile access to off-street on-site parking spaces be established so that automobile users and emergency vehicles can access the open space effectively. Off-street parking should be provided, as per municipal regulations, so that congestion does not impact circulation and access for automobiles entering the site. The interface between the parking areas and the waterfront open space should be treated using the same design principles as noted above for street-ends.
Rationale

The Steveston Landing case study demonstrated how the street-end at the end of Second Avenue in Steveston was integrated into the waterfront open space. Although the road ends for automobiles, pedestrians can continue through the Plaza to reach the Boardwalk and waterfront. The Plaza has a similar width to the Second Avenue road right-of-way, but is separated from the road by a sidewalk and overhead gateway (which forms part of the Steveston Landing buildings). From Second Avenue, which connects to the core of Steveston, automobiles and pedestrians can catch a glimpse view of the waterfront by looking through the Plaza.

At Westminster Quay a similar condition exists at the end of Kdek Court, a cul-de-sac in the residential portion of the Quay neighbourhood, where a street end park is used as a transition between the street and the waterfront open space. Knock-down bollards separate the automobile and pedestrian realms and a brick paver and exposed aggregate concrete surface provide the transition and linkage between the spaces.

At Westminster Quay, there is also the large parking lot to the east of the open space, which is often full and congested, since there is only one primary railway crossing which is controlled by a streetlight. A secondary access to the parking lot is located to the east of the lot. However, this access is not used often since it cannot be seen from the market or open space, and it enters and exists onto a four-way stop intersection of a truck route along Front Street. Knock-down bollards and a change in surface types create the transition between the automobile and pedestrian realms at the interface of the parking lot (asphalt), the Plaza (exposed aggregate) and the Boardwalk (wooden planks).

7.2.2.3 Boundaries and Transitions

Boundaries and Transitions are encouraged to provide linkages between different spaces near the water's edge and to enhance the individual identities of each space.

Explanation and Implementation Strategy

In many cases, waterfront open space is comprised of a Plaza and a Boardwalk. Such spaces should be linked but there should also be distinct elements of design which allow a transition between spaces. To accomplish boundaries and transitions between spaces, the following are encouraged:

1) Using different surface types.

2) Using landscaping, trees and planters to provide an edge between spaces.

3) Creating slight level changes of one to three feet using steps, to provide a transition and connection between spaces. If this technique is used, ramps or other provisions must be included to allow physically challenged people, bicyclists and people pushing children in strollers to move between the two spaces.
Rationale

From the case studies, it was found that the Plaza acts as a land-based feature which is usually surfaced in hard solid materials such as exposed aggregate concrete, and provides the connection between the development close to the waterfront and the Boardwalk which parallels the water's edge. On the other hand, Boardwalks were surfaced with wooden planks, a soft material, and reflected the water-based maritime character. The Boardwalks usually hang over the natural water's edge and provide the water's edge for the open space. The boundary/transition feature between the Boardwalk and the Plaza areas allows a visual and perceived protection of the land-based Plaza from the water and enhances the linearity of the edge of the Boardwalk along the waterfront.

Figure 7.6 Boundaries and Transitions
7.2.3 Pedestrian Areas

Boardwalks or other waterfront pathways should be developed along the water's edge to encourage people not only to come to the waterfront, but to walk alongside its edge.

Explanation and Implementation Strategy

It was found that many people use waterfront open space to exercise by walking. To accommodate this use safely and effectively, the following are encouraged:

1) *Surface materials* which are suitable to walk on, which enhance the theme and character of the waterfront open space but do not impose constraints to wheelchairs, strollers or bicyclists should be encouraged. Wooden boardwalks are one way of providing an inviting thematic surface to accommodate such activities in open space at the water's edge.

2) The *scale* of the boardwalk or other pathways should appear as a linear edge paralleling the waterfront drawing people in and along the water's edge. The scale of the width of the boardwalk or pathway should be a result of the setback and massing of abutting development or landscaping.

3) *Interpretive signage* which enhances waterfront themes should be incorporated. Such signage could refer to site history, local environment (plant, bird, wildlife and plant species), industrial activities, geography, etc.

4) *Destinations* such as public piers can be used to draw people through the waterfront open space to the water's edge. The same destination effect could be accomplished by capitalizing on nearby views of waterfront activity or public art.

5) The terminus of boardwalk or waterfront pathways should not simply end in the middle of nowhere but should provide a *destination* such as a playground or a street-end park, or it should allow an alternative *linkage* to nearby pedestrian networks.

6) Appropriate *lighting* should be developed along the boardwalk or waterfront pathway, to ensure safety for evening walkers. Such lighting should complement the colours, materials and forms associated with the waterfront character and history.

7) Provisions for the *safe separation and accommodation of walkers, bicyclists, skateboarders and rollerbladers* should be encouraged. Spaces designed to accommodate varying uses should appear to be part of the same open space.

8) Although boardwalks and waterfront pathways should allow continuous barrier free movement, there should be occasional seating opportunities along the edges of such pathways to allow walkers to rest.

9) A *railing or ledge* should be encouraged to prohibit walkers from falling over the water's edge and into the water. Such railings should be built to at least 3 feet (0.984 metres) in height and should be constructed of materials, colours and forms which complement the waterfront theme and character. Railings should not block views through the railing but should stop small children from, as well as adults from falling through beneath the rail.
Rationale

The case study data identified that walking was the most frequent activity enjoyed by waterfront open space users. In the user survey questionnaires, the majority of users included exercising as a main reason for going to the waterfront open space. The activity data showed that walking on the boardwalk was the most popular activity at both of the case study sites. Every person who enters the waterfront open space (who is not riding a bicycle or in a wheelchair) must walk through the space at one time or another. It is therefore important to ensure that the space is safe to walk through and that there are reasons to continue walking through the space.

At Steveston Landing, the Boardwalk, which is relatively short in distance and narrow in scale (only 20 feet [6.562 metres] in width) and the Plaza converge at the centre of the site in a star shaped pattern on the ground consisting of a mixture of the wooden boardwalk surface materials and the exposed aggregate Plaza surface materials. At this centre, walkers are drawn through the space and attracted to the destination of the public fish sales dock, where many people go to see the fish for sale (off of the fishing boats). No level changes and relatively smooth surfaces allow all people to easily pass through the space and to the public fish sales dock. However, many people cycle to Steveston Landing and thus congestion of walkers and cyclists often prevails on the Boardwalk. However, this space full of activity provides lots of opportunities for people watching.

At Westminster Quay, the Esplanade Boardwalk draws people through the open space and its 1100 metre (3353 feet) length provide a challenging walk for many visitors. It also provides a pedestrian linkage between the waterfront residential neighbourhoods and the public market and downtown area. On the western portion of the Esplanade, walkers are separated from the bicyclists, skateboarders and rollerbladers, by a 5 foot (1.640 metre) landscaped area. The walking portion is a continuation of the Boardwalk along the water's edge, while the bicycling, skateboarding and rollerblading portion is inland of the landscaped separation and is surfaced with brick pavers and exposed aggregate concrete. Occasionally, there are connections between the two using steps as a transition. The problem with the Esplanade is that it currently ends at a development site next to a saw mill, therefore, walkers are forced into turning around and retracing their steps. There are future plans to extend the Esplanade to connect with the pathways under SkyTrain and other pedestrian systems.
7.2.4 Seating Areas

Seating opportunities consisting of fixed benches, movable chairs and secondary seats are encouraged, and should be strategically located throughout the open space to accommodate seating needs of most open space users. Careful attention should be considered when determining locations of fixed benches such that the flow and circulation of the space is not congested.

Explanation and Implementation Strategy

In a study of New York City plazas, Whyte discovered that if there are places to sit, people will sit. Waterfront open spaces should provide enough seating opportunities to accommodate some but not all people. A balance should be achieved between the number of seats provided to service seating demand and seats which potentially could remain empty for much of the day. To reduce the apparent emptiness of vacant seats, variations of primary fixed benches, movable chairs and secondary seating opportunities should be available throughout the open space.

Movable chairs allow the flexibility of being moved throughout the space as sun and shade patterns change and so chairs can be brought out or put away as necessary, according to demand. By including secondary seating opportunities such as planter ledge benches and steps, people are provided with places to sit when all the other seats are taken, and yet when nobody is sitting on the ledge or steps, the seats and space do not appear empty.

People often sit when they eat food. In this case, seats should be available near food outlets, which are often in or near the plaza areas. To successfully provide seating, the following are encouraged:

1) A balance should be achieved between the number of seats required to accommodate peak seating demand and the number of seats which potentially could be vacant most of the day.

2) Primary benches should be located such that they do not congest circulation through the space.

3) Secondary seats such as along planter ledges and steps should be incorporated, so when seating demand is low, these design components do not appear as empty seats.

4) Movable chairs should be available so that people can move the chairs to join a group or adjust their position to take advantage of sun or shade. Movable chairs can also be brought out or put away according to seating demand.

5) The colours, materials and forms of seating should complement the theme and character of the open space.

6) There should be seating opportunities, and possibly tables near food outlets, which are often located in or near the Plaza.

Rationale

The waterfront open space at Steveston Landing was deficient in providing enough seating to accommodate seating demand. This condition was apparent by the large numbers of people who were forced to stand next to friends and family who were sitting. Also, as the space became congested with sitters, people would sit closer together. In addition, the location of benches in the Plaza was perpendicular to the flow of people through the Plaza, thus congesting circulation.
On the other hand, Westminster Quay provided numerous seating opportunities. The most prominent of these seats were the secondary planter ledge benches and the steps between the Plaza and the Boardwalk. When the space was busy, these seats would become filled, but there was always more seating space on the steps or further down the ledge. When the space was empty, these seats simply appeared as a planter and steps. There were also movable plastic bistro chairs and tables in the Plaza, close to the market, where food could be purchased. As the space became more or less busy throughout the day, market staff would bring out or put away the chairs, as necessary.

Whyte suggests that a quantitative regulation should apply for the supply of seating in urban plazas. In his analysis of Seagram's Plaza in New York City, he determined a conceptual figure of one linear foot of bench space for every 30 square feet of plaza space. Such a formula could be helpful as a guideline for waterfront open space, however, due to the complexity, scale and shape of the space, and the variety of seating types available, it would be difficult to determine a standard figure which could be applied to various waterfront open spaces.
7.2.5 **Bicycles**

*Opportunities for bicyclists to safely access waterfront open space and securely park their bicycles should be encouraged.*

**Explanation and Implementation Strategy**

As an alternative to automobile use, many waterfront open space users ride bicycles to access the space. The Boardwalk or waterfront pathway provides an excellent medium for riding bicycles. As discussed in previous guidelines, it is important that barriers of access to waterfront open space be reduced in order to ensure safe and easy access for bicyclists to the space. In addition, once bicyclists reach the space, there should be opportunities to securely park and lock their bicycles on bike racks or rails within public view. In some cases, the rail paralleling the water's edge along the Boardwalk, can serve as an alternative location to park and lock bicycles. To accommodate the access and parking of bicycles, the following should be encouraged:

1) Level changes should be reduced to a minimum. Where level changes must occur, *ramps* with a shallow slope should be constructed such that bicyclists can easily climb the grade.

2) *Boardwalks* and other waterfront pathways are encouraged to provide space where bicyclists can travel without the threat of mistakenly striking a pedestrian.

3) Boardwalks and other waterfront walkways which include bike paths, should *connect* with other pedestrian and bicycle networks outside the waterfront open space.

4) *Bike racks and rails* should be located within public view, but not such that they congest the open space. There should be enough bike racks to accommodate the average number of bicycles which attend the open space. Bike racks should allow bikes to be securely locked and parked.

5) Where it is not possible to provide bike racks, the waterfront rails can be designed so that bikes can be locked to it.

**Rationale**

At Steveston Landing, where there are excellent connections to the Richmond Trails system and no level changes, as many as 50 bikes could be seen parked in the racks and along the Boardwalk rail at one time. The user survey questionnaire data pointed out that over one third of the people had ridden bicycles to travel to the site. Although there are bike racks at either end of the Boardwalk, which can park about 24 bicycles, the racks could not accommodate the demand for bike parking and therefore people would park and lock their bikes to the waterfront rail. The many colours of different bicycles parked on the rail and the outfits of people who ride them provide visual excitement, however, they also congest the flow of the open space and block some views through the rail of the water.

At Westminster Quay, the railway creates a barrier to bicycle access. Bicycles must either cross the railway tracks at-grade amongst the automobiles or by lifting their bikes up the many steps of the pedestrian overpass bridge across the railway. As a result, very few people had traveled to the site by bicycle, as reflected by the user survey data and the small number of bicycles parked on the waterfront rail of the Boardwalk.
7.2.6 Food and Commercial Uses

Buildings adjacent to waterfront open space should be encouraged to incorporate commercial uses such as restaurants, gift shops, artists studios and food vendors. Also, mobile food vendors should be encouraged to take-up temporary positions within the waterfront open space.

Explanation and Implementation Strategy

Many of the people who attend waterfront open space can often be seen eating food. In Whyte's analysis of New York City plazas, Whyte discovered that eating was one of the most popular activities enjoyed by plaza users. In much the same way, if the opportunity is present to purchase food, waterfront open space users will purchase and eat food while they sit, walk or stand in the open space. The diverse aromas, colours and sounds arising from the food vendors add an exciting dimension to the character of the open space and create interesting visual stimuli. To accommodate eating activity, the following are encouraged:

1) Buildings located adjacent to waterfront open space should be encouraged to include commercial uses, restaurants and food outlets (such as frozen yogurt, ice cream, fish and chips and espresso shops).

2) Food outlets should have purchase windows open to the open space, whereby open space users can line-up outside to purchase food. The line-up creates visual excitement.

3) Mobile food vendors should be encouraged to take-up temporary positions in the waterfront open space (under the appropriate municipal licensing and/or agreements with adjacent property managers where a portion of the Plaza is privately owned).

4) Sufficient garbage receptacles, designed in a form, colours and materials which complement the theme of the open space, should be provided throughout the space to accommodate food waste.
Rationale

In the case studies, it was found that many of the people who were sitting, standing or walking, were also eating food. The user survey questionnaire data determined that a many of the respondents replied that to eat was a major purpose for going to the waterfront open space.

In Plaza at Steveston Landing, as many as 35 people could be seen standing in the line-up for frozen yogurt. Many of the people strolling along the Boardwalk were either eating frozen yogurt or drinking coffee. In the same manner, at Westminster Quay, numerous food outlets within the Public Market provide food for Plaza and Boardwalk users. In the Noon and Afternoon observation periods, most of the people seated on the secondary planter ledge benches along the Boardwalk and in the movable chairs of the Plaza were eating food while seated. The diversity of food types, the colours of frozen yogurt and the smell of coffee and popcorn added an excitement to the open space.

Figure 7.10 Food and Commercial Uses

7.2.7 Theme and Character

The theme and character of waterfront open spaces should make use of any maritime histories associated with such sites, and should be expressed in the colours, materials, forms, street furniture and public art of the open space.

Explanation and Implementation Strategy

Most waterfront redevelopments occur on waterfront lands which once were the site of industrial and maritime uses which historically provided the economic basis for the city as well as connecting the city to the rest of the world through port facilities. These waterfront sites possess an maritime and industrial heritage based on a working waterfront. Legacies of these activities can be still be seen today as reflected by tug boats, barges and fishing boats. In some cases, an environmental heritage regarding bird, fish, vegetation and wildlife species which once inhabited (and still inhabit) the waterfront exists.
In order to capture the history and character of the waterfront and successfully present these in a consistent theme, the following should be considered when designing waterfront open space:

1) A consistent *theme and character* is encouraged in the signage, street furniture, lighting, surfaces, colours, materials, forms and public art.

2) The theme and character of waterfront open space can reflect the *history* of the waterfront. This history may include components of the industrial *working waterfront*, the *environmental heritage* or the *maritime traditions*.

3) The design components are encouraged fit together to *tell a story about the history of the waterfront* location and provide people with the feeling that they are close to the water. *Public art* can be used to help tell this story and to spark peoples' imaginations.

![Figure 7.11 Interpretive and Thematic Signage](image)

4) Design components such as signage, street furniture, lighting, surfaces, colours, materials, forms and public art should be *durable* and be able to resist weathering, human use and seagulls. As well, they should be safe.

5) *Lighting* is encouraged to be consistent in form, colours and materials to the common theme, but should be sufficient to provide safety for evening and early morning open space users.

6) *Signage* should be consistent with the theme, and should clearly portray its messages. Interpretive signage is encouraged to assist in telling the story of the history and current activities of the site and water beyond.
Rationale

As waterfront sites redevelop from industrial uses or a natural environmental state, it is important that a component of their history be maintained for future generations to understand and enjoy. The open space required in waterfront redevelopments provides the ideal medium in which to express this history.

At Westminster Quay, bronze cannon sculptures and a statue of Simon Fraser tell a story about the history of settlement along the Fraser River. The Expo Tugger playground, in the shape of a tugboat and the bell buoy statue at the entry to the open space portray a nautical character. This nautical historical theme is reflected in the wooden planks of the Boardwalk, the light blue and white colours of the Boardwalk rail and lamp standards and the signage, which shows an old river paddle wheeler boat.

In much the same way, at Steveston Landing, the signage takes the form, colours and materials of the signs that historically could be found on the side of a cannery. Even the buildings look like cannery buildings in their form light grey colours and shiplap wood siding and fixtures. The lamp standards and other lighting are very similar to the type that is found on the docks which house the fishing boats at Steveston Landing. The close view of the fishing boats along the public fish sales dock provides the centre point of the fishing boat/cannery theme, which is reminiscent of the Steveston waterfront. As well as providing a visually stimulating environment, the consistent theme and character of all of these design elements tell a story about the history and current uses of the Steveston waterfront.

7.2.8 Children's Activities

Children's play areas are encouraged to be incorporated into waterfront open spaces. Play areas and public art should capture children's interests and provide stimuli for their imaginations, as well as providing an educating role regarding the waterfront.

Explanation and Implementation Strategy

An important user group who are often neglected are children. Many urban plazas do not provide design features which capture the interest of children. On the other hand, waterfront open space is enjoyed by people of all ages and thus play areas and public art which allow children's imaginations to wander should be incorporated. To accomplish this task:

1) Play areas and public art should capture children's interests and allow their imaginations to wander.

2) Play areas and public art are encouraged to include thematic elements which tell a story about the history and current activities of the waterfront.

3) Play areas should be designed to allow safe visual security for on looking parents and guardians.

4) Play areas and public art should not present a danger to children. Sharp objects and high ledges and platforms should be avoided.

5) Play areas and public art can also capture the interests and spark the imagination of adults.

6) Play areas and public art should be constructed of durable materials which can tolerate not only weathering but also the intense activities of children.

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Rationale

Children bring a youthful character to all types of parks and open spaces. Children should not be neglected when designing waterfront open space. At Westminster Quay, the Expo Tugger playground demonstrated how a children's play area could be incorporated into the space by building the playground in the shape of a tug boat. By taking this shape, there are lots of knobs and levers for children to play with as they imagine they are the captain of the tug and they learn about the history of the river.

As well, the form, colours and materials of the play area are consistent with the river theme of Westminster Quay, and thus enhance the character. Parents and guardians can safely watch their children through the large windows of the Tugger, which do not have glass. Occasionally, seniors and others also enjoy watching the children play and bring a youthfulness to the waterfront space.

Figure 7.12 Children's Play Areas and Public Art

7.2.9 Microclimate

Trees and landscaping can be used to provide protection from the sun and shade opportunities. Where possible, southwest exposure should be capitalized in order to maximize sunlight into the open space.

Buildings are encouraged to be oriented such that there are opportunities for both sunlit and shaded areas in the open space at different hours throughout the day.

Explanation and Implementation Strategy

1) Trees and landscaping can be used to reduce the impacts of wind off of the water, and to provide protection from the sun.

2) Where possible, southwest exposure should be capitalized in order to maximize sunlight in the open space.

3) Buildings are encouraged to be oriented such that a variety of sunlit and shaded areas are provided in the open space through different hours of the day.
Rationale

The aspects of sun and shade were apparent at both of the case studies. During the daytime, both site benefited from southwest exposure. However, in the late afternoon and evening (depending on the time of year), the spaces were largely shaded by the adjacent buildings. As a result, the spaces would become cold, and would empty of people. People who did remain were usually found on the waterfront edges of the Boardwalk where the last glimpses of sunlight could be enjoyed. The Plaza areas, next to the buildings became void of people.

On the other hand, on extremely hot and sunny days in the summer, the Boardwalk and its benches had no trees or landscaping to protect open space users from the extreme rays of the sun, or the evening breeze of the water. At Westminster Quay, the landscaped planter and occasional trees between the Boardwalk and the Plaza provided Plaza users with a refuge from the sun and wind.

7.2.10 Environmental Considerations

Special precautions should encouraged to ensure that the impact of development on bird, fish, vegetation and wildlife species is minimized. Where possible, environmental compensation and preservation measures are encouraged to be implemented.

Explanation and Implementation Strategy

The development of urban waterfront open space should try to result in a no net loss circumstance whereby bird, fish, vegetation and wildlife habitats are either preserved or replaced. In order to accomplish this task, environmental compensation measures which include, but are not limited to the following, are encouraged:

1) The natural water's edge (often beneath a Boardwalk or parallel to a sea wall, dyke or pathway) is encouraged to be secured with rip-rap or another material which extends well below the high and low water marks to stabilize the edge and provide a habitats where fish, birds and vegetation may thrive.

2) Inter-tidal benches can be built into dykes, so that marsh vegetation and grasses can grow, providing a habitats for fish, birds and micro-organisms.

3) If used, Environmental compensation and preservation measures are encouraged to be designed such that their form complements the design of the waterfront open space.

4) Storm drains and run-off from the open space and adjacent development should be kept to a minimum.

5) Where possible and available, some areas may be preserved in a natural environmental state.
Rationale

The Fraser River Estuary Management Program (FREMP), a co-operative effort comprised federal, provincial and municipal agencies, has published numerous reports regarding natural habitats, environmental regulatory policies and development along the Fraser River. Many of these studies have suggested the above-noted guidelines as ways to preserve and enhance the waterfront environment.

The City of Richmond has also developed a series of guidelines which pertain to waterfront preservation and conservation. Richmond publishes a map (which uses the same environmental inventory data as the FREMP studies) which identifies environmentally sensitive areas. Almost all waterfront areas in Richmond are included in this inventory and guidelines suggest in such areas, a 30 metre strip of land (measured back from the high water mark) should be preserved in its natural state, free of development. Where development is permitted, Richmond's guidelines suggest using Boardwalks and wooden public piers which hang over the water's edge, to conserve and protect shoreline habitats.
Chapter Eight

Conclusions
8.0 Conclusions

8.1 Life at the Water's Edge - Purpose Restated

As stated previously, the purpose of this thesis is to study the relationship between the design of public open space at the water's edge in urban waterfront redevelopments and how this space is used, and to determine what other factors influence use.

8.2 Primary Research Results

To research this purpose, two waterfront case studies and the urban design literature regarding urban open spaces were examined. From this process, an inventory was established of design elements found in urban waterfront open spaces. From this inventory, parallels were made between the design of waterfront open space and urban plazas.

Activities and groupings of waterfront open space users were observed to determine how the space was used and by whom. As well, users were surveyed with questionnaires to find out their purposes for attending the open spaces, how far they traveled to access the open spaces and how they traveled. As a result of this research, a series of design principles were developed, which summarize the thesis findings and provide implications for the development of future urban waterfront open spaces.

As a result of the research findings, two critical relationships evolved from the case study data and the literature:

1. Design Influences Use

2. Other Factors also Influence Use

8.2.1 How Design Influences Use

The design principles presented in section 7.2 provide a comprehensive summary reflecting the elements of design types of activities that were found in the case study waterfront open spaces. Each design principle provides a principle statement followed by explanations and implementation strategies, and rationale statements justifying the reason for the principle,
by referring to the case studies. Comparisons of activity data and user survey trends for the case studies in section 7.3 determined connections between the design of the spaces and how they were used.

From the design principles and case study comparisons, research indicated the following connections between design and use:

1. **Walking Activities and the Boardwalk**

   Urban waterfront open space often consists of two overall design features: the *Plaza* and the *Boardwalk*. These two features are similar to the "Square" and "Street", which Krier defines as being the two components of urban public open space, within which eating, recreation and circulation take place (Krier, 1979: 17).

   Walking on the boardwalk was found to be the most frequent activity in the waterfront open spaces. The boardwalk provided a safe comfortable and inviting place to walk, and was the closest the public could get to the water's edge. User survey questionnaire data identified exercising as the most popular purpose for peoples' trips to the case study waterfront open spaces. The boardwalk permitted unobstructed walking opportunities, with lots of visual interest both on-land and on-water. The wooden planks of the Boardwalk provided an excellent medium for walking and complemented the historical working river theme of the two spaces.

2. **Seating Activities and the Plaza**

   The plazas of both of the case study sites acted as through spaces, linking adjacent buildings and streets with the boardwalk and waterfront. The plazas were often cluttered with fixed and movable primary seating, which was frequently occupied. Often people sitting in the plaza were also eating food, which they had purchased from the vendors on the perimetre of the plaza in adjacent buildings.

   Sitting in the plaza was the second most frequent activity after walking on the boardwalk at Westminster Quay, where there many places to sit. However, at Steveston Landing, although plaza seats were often fully occupied, there were only two benches and four movable chairs, therefore because there were no places to sit, seating frequencies were lower. As a result, many people would end up standing stationary, as
was reflected by the data. Cooper Marcus suggests that seating is the most important element in plaza use (Cooper Marcus, 1990: 32). By providing seating opportunities in waterfront open spaces, sitting activity is encouraged.

3. **Viewing the River and the Rail**

The user survey data discovered that to view the river was the second most popular purpose for peoples' trips to the two sites. From the boardwalk on both sites, there were excellent views of the river. The medium to high frequencies of the activity of leaning on the rail were consistent with the purpose data. The rail was the closest people could get to the water's edge and still remain safe from falling in the water. Participant observations noted that almost all people leaning on the rail had their gazes focused out to the water. The rails light blue and white colours and steel tube materials complemented the maritime character of the sites, and provided ideal places to view the river.

At both sites, the river could also be viewed from the boardwalk benches and in the case of Westminster Quay, from the slightly elevated plaza. At Steveston Landing, there were only narrow glimpse views of the river, through the plaza.

4. **Pedestrian Access and Circulation Versus Level Changes**

The were fewer people in wheelchairs, bicyclists, seniors, and adults pushing strollers at Westminster Quay than at Steveston Landing. Level changes between the plaza and boardwalk at Westminster Quay (although providing an effective transition and boundary between the two spaces) presented an obstacle for these people. On the other hand, Steveston Landing had no level changes in the open space. The number of bicyclists attending the space was much larger as were the number of adults pushing children in strollers and people in wheelchairs. Cooper Marcus points out that if level changes are incorporated, they should not be more than a few steps in height (Cooper Marcus, 1990: 39-40).
5. Integration of Street and Parking Areas

At Westminster Quay, the waterfront open space was well integrated with the large parking lots, to the east of the space. Although not few people accessed Westminster Quay by pedestrian means, many people drove their automobiles distances over 5 miles to get to the site, as discovered in the user survey results. The availability of parking and the smooth transition between the parking lot and the open space, made it easy for these people to access the space.

Steveston Landing suffered from only a small number of parking spaces on site, but was well integrated with the street-end of Second avenue, providing a linkage to the centre of Steveston. This street-end linkage was used more by pedestrians than by automobiles, as reflected by the user survey data, which showed that almost half of the people had accessed the site by pedestrian means. Cooper Marcus suggests that open spaces should be integrated and yet separate from the street; one should lead into the other so that it is hard to tell where one ends and the other begins (Cooper Marcus, 1990: 39-40).

6. Boundaries and Transitions Between Spaces and Circulation

Boundaries and Transitions between spaces were used successfully at both sites to integrate and yet separate boardwalk and plaza areas. The treatment of the Westminster Quay edge between the two spaces, using a landscaped planter and steps (through a level change) created more of a boundary, restricting circulation between the spaces to a few key points where there were steps. On the other hand, at Steveston Landing, the integration of boardwalk wood and plaza concrete surface materials created a transition and encouraged flow through the space. Many people enjoyed walking and standing in the centre of the transition between the two spaces, symbolized by a star-shaped compass pattern on the ground (resulting from the integrated wood and concrete).
7. Destinations and Circulation

The Public Fish Sales Dock at Steveston Landing encouraged many people to walk through the open space, to access the water's edge, as noted by the average 35 people per minute that descended the ramp to the dock. In like manner, the Esplanade at Westminster Quay attracted many people to walk its 1100 metre distance along the water's edge, as reflected by the dominant activity of Walking on the Boardwalk and the popularity of exercising as a purpose for attending the space. Destinations were used successfully on both sites to attract and encourage circulation to or along the water's edge.

8. Microclimate and the Impacts of Sun and Shade

One of the pitfalls of waterfront open space is its exposure to off-shore winds and the limitation of orienting the space to the natural water body (be it a river, lake, pond or ocean). Trees along the landscaped planter at Westminster Quay provided some protection from wind for plaza users. However, the boardwalk was unprotected from wind. At Steveston Landing, which had little landscaping and no trees, open space users were in direct contact with the wind. At times, the narrow plaza acted as a wind tunnel.

Both sites experienced southern exposure. In this case, in the late afternoon, the sun would disappear behind the buildings and the plazas would become shaded. Within minutes, the spaces would become void of people. Most people would relocate to the boardwalks, where there was still sunlight. Whyte found that people move with the sun while shaded areas become empty, in his study of Seagram's Plaza in New York (Whyte, 1980: 40).

9. Children's Play Areas and Public Art

Children's play areas attracted children and guardians, as well as people watchers. The Expo Tugger playground at Westminster Quay, which was in the shape and colours of an old river tug boat, was excellent at capturing children's and adults' imaginations, as reflected by the activity data and participant observations. The Tugger's bright colours, form and materials enhanced the theme and character of the space. Also, a colourful bellbuoy and an old cannon provided places for people to sit or for children to play.
Steveston Landing did not have playgrounds or public art. As a result, there were no frequencies of children or adults playing in the playground and there were fewer children between the ages of 3 to 12 attending the site.

10. Theme and Character

Both of the case study sites were comprised of design elements, including, street furniture, signage, lighting and public art, which were consistent with maritime themes reflecting the sites' working waterfront histories. These themes and characters focused their attentions on the river. The user survey data identified that viewing the river was a major purpose for attending the space. By including design elements which complement the river character, the high frequency of viewing the river was partially a result not only of the river itself, but of the design elements which celebrate the river and focus peoples' attentions towards the river.

8.2.2 Other Factors Which Influence Use

Earlier in the thesis, the impacts of weather were assumed to be held constant so as to not affect case study results. To accomplish this task, site observations took place (consistently on both sites) only on sunny days in the summer months, when the peak number of people were using the spaces. As well, since the thesis examines design issues, economics were assumed not to influence findings of the study.

However, factors other than relating to open space design were discovered which had a marked impact on the way the waterfront open space was used. These factors included the following:

1. Barriers to Access Beyond Site Boundaries

The Westminster Quay case study demonstrated that the barrier to pedestrian access caused by the railway crossing resulted in relatively low numbers of people walking or bicycling to the site. The user survey data showed that only a small portion of the users walked to the site, and that all of these walkers lived in the adjacent waterfront residential neighbourhoods. The railway crossings either had too many steps (in the case of the pedestrian bridge) or were unsafe (in the case of the at-grade crossing) for
most pedestrians. The impact of these barriers was accented for senior citizens, the physically challenged and pedestrians pushing children in strollers. As a result, few of these people used the open space at Westminster Quay.

2. **Connections to Off-Site Pedestrian Networks**

At Steveston Landing, excellent connections with the Richmond Trails System and the street sidewalks, with no level changes, provided pedestrians with an ideal walking and bicycling environment. The popularity of these activities was reflected in the high frequencies of people walking the boardwalk and biking, and by the many bicycles parked along the waterfront rail. User survey results illustrated that almost half of the open space users had accessed the site by pedestrian means and had traveled less than 4 miles. The flat topography of Richmond also encouraged easy biking and walking activities.

3. **Critical Residential Mass of Potential Users**

Statistics Canada census data were consulted in order to determine if there were residential neighbourhoods in the vicinity of the case study sites. In each case, the data demonstrated that indeed Westminster Quay and Steveston Landing had adjacent residential critical masses. However, the composition of the residential neighbourhoods was different for the two sites. Steveston Landing had many single family dwellings housing male/female pairs and families within its vicinity.

On the other hand, Westminster Quay had a multiple dwelling neighbourhood compacted between the railway and the river, to the west of the site. The majority of this population were singles and male/female pairs. Overall, there were slightly more people living in the vicinity of Steveston Landing. The critical mass in the vicinity of Westminster Quay is where most of the people who had walked to the open space lived, as reflected in the user survey responses.
4. **Food and Commercial Uses**

The conceptual design principles presented in section 7.2 encourage opportunities for the selling of food. In the case studies, food vendors were located within the buildings adjacent to the open spaces. At Steveston Landing, where food outlets opened onto the plaza, line-ups as long as 35 people (such as at the frozen yogurt store) could be seen extending into the plaza. The diversity of colours, smells and foods sold by food outlets added an exciting dimension to the waterfront open space. The majority of the people sitting in the plazas and boardwalks of both sites, were usually eating food. Whyte suggests that food attracts people, which in turn attract more people (Whyte, 1980: 52).

5. **Visual Interest on the Water**

The various activities taking place on the river added an exciting element to the open space. Occasionally a tug boat (sometimes with barge) or speed boat would pass Westminster Quay. In almost every case, the number of people standing and leaning on the rail would increase dramatically. Also, the river activity comprised of components of the working waterfront, the tour boats, the natural environment and the water itself, could also have been reasons for the high frequencies of viewing the river as a primary purpose for visiting the waterfront open space.

6. **Programmed Events, Street Performers and Festivals**

Programmed events such as live bands, carnivals and festivals attract people to a site. Even if people are not impressed by the function, they will seek it out to satisfy their curiosities. The management of the market at Westminster Quay were very aggressive in organizing spring and summer events which occur in the waterfront open space. Often, the sounds of live bands, such as the Soul Survivors, could be heard ringing-out from the space.

One weekend there was a children's carnival. During the Fraser Festival in July, two Canadian Navy ships berthed alongside the parking lot (to the east of the open space) and offered free tours of the ship. The line-up was two hours long to take the tour. Occasionally unprogrammed street performers would spontaneously set-up and start playing in the plaza. Often a crowd would be spectating from close by while other
people throughout the space also enjoyed the music. Programmed events and street performers can alter the way a space is used for short term periods. Festivals such as the Fraser Festival at Westminster Quay and the Salmon Festival at Steveston Landing carry with them a series of traditions that are focused on the river and the history of the waterfront.

8.2.3 Overlap and Inter-Relationships Between the Influence of Design and Other Factors on Use

Research discovered that many of the above-noted design features and other factors which influence the use of urban waterfront open space overlap. For instance, the activity data determined that sitting in the plaza was a frequent activity at Westminster Quay. As discussed previously in section 8.3.1.2, this activity was partly a result of the fact that there were seats located in the plaza. However, the sale of food in the adjacent market may also have caused the high frequencies of sitting in the plaza, since many of the plaza sitters were also eating food.

The high incidence of viewing the river as a purpose found in the user survey results could have partially been a result of the views afforded by the sites orientation and the waterfront rail, but also could also have been because people like to look at tug boats.

8.2.4 The Bridgepoint Example

In addition to the Westminster Quay and Steveston Landing case studies, which were studied in great detail, initial studies occurred on a third case study: Bridgepoint in Richmond BC. However, the Bridgepoint example could not be included as a complete case study because half-way through the research process, the owners of the site removed all commercial uses from the site, and as a result, very few people used the open space at Bridgepoint. Although the same methods of analysis were used to collect data at Bridgepoint as were used for the other case studies, observation data sets would have been incomplete. The User Survey questionnaire could not be administered because there was nobody using the space. However, this in itself was an important finding.

Many of the lessons regarding the influence of design on use, and more importantly the influence of other factors on use were clarified by the Bridgepoint example. To begin with, Bridgepoint suffered from bad access. Bridgepoint is located on the Bridgeport area of
north Richmond, along the North Arm of the Fraser River. The site is dominated by a massive market building, which at one time accommodated various commercial uses, and constructed in a design, theme and character which has no connection to the waterfront or site history.

The site is disconnected from the remainder of Richmond by a railway, vacant industrial lands and industrial land uses. One road accesses the site, which ultimately joins to No. Three Road (to the south) and River Road (to the northeast). There are no bus routes which frequent the site (other than an airport shuttle that formerly operated twice a day, during peak hours) and none of the municipal trails or sidewalks connect to the site. Many of the commercial tenants whom used to occupy the market area of the site informed that their business declined because of the poor access, and that they had petitioned BC Transit for a bus connection since the opening of the market and site in the late 1980's. Poor pedestrian and bicycle access was reflected by the low frequencies of bicycling and people walking on the boardwalk.

A review of Statistics Canada census tract data for the area within a 500 metre radius of Bridgepoint identified that there was a population of only 340 people, most of whom were families living in single family dwellings in the residential neighbourhood almost 0.5 Km to the east of the site. However, this neighbourhood is separated from Bridgepoint by heavy industrial uses. As a result, it appeared as though there was no critical residential mass nearby Bridgepoint. This was also reflected by the number of automobiles in the large off-street surface parking lots of the site, which suggested that most people had driven to the site from outside the area.

The open space at Bridgepoint consists of a large plaza, filled with recycled mesh metal Expo '86 benches and fixed metal tables and chairs near the market. To the north of the plaza, along the water's edge, a boardwalk, constructed of wood, which parallels the waterfront and extends out over the water as a long public pier on the west side of the site. Beyond the usable open space is a large marsh area which has been left undeveloped and serves as a bird sanctuary for ducks and other birds. There is also a restaurant/pub which extends out over the water on the east side of the site, and a private marina, on the water in front of the open space. The marina separates the open space from the river activity, but allows close views of the various boats. Distant views of industrial activity on the north side of the river can be seen. The problem is, the space appears to large in scale, and
market patrons rarely ventured across the large plaza to access the boardwalk at the water's edge.

When the market was occupied by commercial uses such as food vendors, bakeries, florists and gift shops, activity observations determined that the majority of activities occurred close to the market building in the fixed tables and chairs and in a children's playground next to this seating. The dominant activity was sitting in the plaza, as demonstrated by people who had purchased food in the market and were sitting and eating in the nearby fixed tables and chairs. The playground area was usually filled with children and adults, especially on weekdays. Most people using the space came out of the market and were carrying shopping bags, which indicated that they were at the site primarily to shop, not to use the open space. Very few people walked directly from the parking lot into the open space. There were no people in wheelchairs or walking dogs at Bridgepoint. There did however, seem to be a following of young mothers with children who would frequently attend Bridgepoint on weekday afternoons. These people were almost always seen carrying shopping bags and using the playground, which would suggest the intent of their trips was to shop in the market and entertain the children in the playground.

In 1992, the market owners, Park Georgia Realty Ltd. terminated all lease agreements with the commercial tenants and shut down the market. The only uses remaining in the building are Park Georgia's office and an insurance broker. On subsequent trips to the site, after the closure of the market, the largest number of people observed using the open space was 3. In every instance, these people were not at the site only to enjoy the open space, but were there to use the boardwalk for to access the marina.

Bridgepoint provides an excellent example to demonstrate how poor pedestrian, transit and automobile access; the lack of a critical mass of potential users living nearby the site; the loss of commercial uses and food, and; poorly designed, oversized spaces with too many fixed chairs and benches, located far away from the water's edge, have ultimately resulted in a waterfront open space which has become dilapidated and unused. These findings clarify some of the lessons learned from the Westminster Quay and Steveston Landing Case Studies.
8.3 Additional Conclusions

In addition to the primary research results, other issues were also identified by the case studies and literature, which did not directly influence use but provided insights regarding the complexities involved in the development process for waterfront open spaces. These issues are summarized as follows.

8.3.1 The Process of Urban Waterfront Redevelopment and Change

Review of literature documenting the urban waterfront redevelopment process identified that urban waterfront redevelopment is a recent phenomenon in North America, resulting from the decline of waterfront industrial activities and the demand for land on which to build residential neighbourhoods within inner cities. Other reasons for waterfront redevelopment noted in the literature included an increased demand for urban recreation, stricter environmental policies and the cleansing of watercourses, and peoples' increased desire to live in amenity locations such as at the waterfront.

8.3.2 Achieving Public Access to the Water's Edge

The literature research discovered that it was during the waterfront redevelopment process that public access to the water's edge is secured. This task is made possible by park land dedications along the water's edge and by the establishment of public pedestrian linkages between the waterfront and the city.

The redevelopment processes which occurred on each of the case study sites involved one public sector owner. In the case of Steveston Landing the project was managed by the federal government and tendered out for development and property management. In the case of Westminster Quay, a joint venture between the provincial and municipal governments called the First Capital City Development Corporation (FCCDC) assembled large tracts of dilapidated waterfront land and managed the redevelopment process. In both cases, continuous public access to the water's edge was a major objective which was successfully achieved.
8.3.4 Policy Context

The literature and case studies discovered that numerous policy statements exist in official community plans and area development plans to achieve public access to the water's edge. However, in almost all cases, these statements were very general and provided no direction or guidance regarding how public access should be achieved or how waterfront open space should be designed. In response to this deficiency, this thesis transcends municipal policies by closely examining how waterfront open space is designed and how it is used, in order to provide implications and design principles for the development of future urban waterfront open spaces.

8.3.5 Overlapping Jurisdictions

Research findings discovered that part of the reason for the deficiency in policies which guide and regulate the development of urban waterfront open space, was the complex web of regulatory jurisdictions involved in reviewing waterfront development proposals. Numerous different agencies (listed in section 5.6.2) are involved in the review process for Vancouver Lower Mainland waterfront development proposals. For sites encompassed by the Fraser River estuary, a co-operative effort called the Fraser River Estuary Management Program (FREMP) was established in the early 1980's in order to co-ordinate and streamline the multi-jurisdictional review process. FREMP has also conducted various studies regarding the habitat, recreation and industrial aspects of the Fraser River, in order to provide recommendations for managing future growth and development in the Fraser River estuary.

8.3.6 Environmental Concerns and Policies

One of the original reasons for establishing FREMP was to examine the state of the environment in the Fraser River estuary. As a result of FREMP recommendations and other research, the development review process also involves a strict environmental review in which all levels of government are involved. The Steveston Landing case study demonstrated the rigorous environmental policies which Richmond implements and provided a sketch identifying the various jurisdictions responsible for regulation of development along the foreshore of the Fraser River. FREMP and the City of Richmond have identified sites along the river which are of low, medium or high environmental value,
depending on environmental inventories. From this categorization system, potential
development sites are identified or not permitted.

8.4 **Strengths and Weaknesses of the Methodology**

The comparative case study method and the data collection methods described in chapter
four were effective for performing the exploratory research demanded by this thesis. The
case studies provided a comparison between two urban waterfront open spaces which had
undergone similar redevelopment processes, at about the same time, and shared various
similarities and differences in their design and use.

Standing alone, any one of the four data collection methods used would have been
inappropriate and invalid. However, trends were identified from the data by merging and
comparing the data from four different data sources, which included observing physical
traces; counting and observing the behaviour of people as noted by their activities and
groupings; conducting focused interviews with the designers, planners, managers and
regulators of the case study sites, and; analyzing user survey questionnaires for each of the
case study sites.

8.5 **Anticipated Outcomes of the Thesis**

In the introduction, ten thesis goals and objectives were listed. Through a rigorous
research and learning process, each one of these objectives was researched, analyzed and
summarized in this study. Having researched these goals and objectives, the most striking
finding was the void that exists in planning policies to guide and regulate the development
of urban waterfront open spaces. The "Policy Context" sections of the case studies
identified various policies which regulate land-use and the design of buildings. However,
these types of policies were not available for waterfront open space.

In response to this void, the anticipated outcome of the thesis is that the research findings
expressed throughout the study and summarized in the Design Principles presented for the
development of future waterfront open spaces, will be adopted by agencies involved in the
regulation of waterfront lands, and that these guiding principles will form the basis for
further academic enquiry on this and other related topics.
Urban waterfronts are a unique and valuable amenity which should be accessible for all of the public to enjoy. It is anticipated that this thesis will establish the basis for stewardship of the urban waterfront, so that the benefits of the waterfront can continue to be enjoyed by future generations.
Chapter Nine

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9.0 Bibliography

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9.2  **Focussed Interviews**

In addition to the textual references and resources, the following people were interviewed throughout the research of this thesis:

<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th><strong>Organization</strong></th>
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<td>City of Richmond Planning Department</td>
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<td><strong>Yvonne Stiches</strong></td>
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<td><strong>Leda Molnar</strong></td>
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<td>May, 1993</td>
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<tr>
<td><strong>Mike Beasely</strong></td>
<td>PhD. Candidate, U.B.C. School of Community and Regional Planning</td>
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Chapter Ten

Appendices
Appendix A
Case Study Observation Data

A.1  Westminster Quay - Weekday Activities
A.2  Westminster Quay - Weekend Activities
A.3  Westminster Quay - Weekday Groupings
A.4  Westminster Quay - Weekend Groupings
A.5  Steveston Landing - Weekday Activities
A.6  Steveston Landing - Weekend Activities
A.7  Steveston Landing - Weeday Groupings
A.8  Steveston Landing - Weekend Groupings
Appendix A.1
Westminster Quay - Weekday Activities
Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Watching/Playing in Playground
Westminster Quay

Frequency of Activities

Weekday Afternoon

Activity

Frequency

Primary Sitting on Boardwalk

Primary Sitting in Plaza

Secondary Sitting on Boardwalk

Secondary Sitting in Plaza

Walking on Boardwalk

Walking in Plaza

Standing Stationary

Leaning on Rail

Biking

Walking Dogs

Wheelchairing

Pushing Strollers

Kids Playing in Playground

Adults Watching/Playing in Playground
Appendix A.2
Westminster Quay - Weekend Activities
Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Watching/Playing in Playground
Frequency of Activities
Weekend Afternoon
Westminster Quay
Westminster Quay
Weekend Evening
Frequency of Activities

Activity

Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Watching/Playing in Playground
Appendix A.3
Westminster Quay - Weekday Groupings
Westminster Quay
Weekday Noon
Frequency of Groupings

- Single Males
- Single Females
- Males in Groups (≥2)
- Females in Groups (≥2)
- Male/Female Pairs
- Males/Females in Groups

Frequency

Grouping
Westminster Quay
Weekday Afternoon
Frequency of Groupings

<table>
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<tr>
<td>Single Females</td>
<td>25%</td>
</tr>
<tr>
<td>Males in Groups (&gt;2)</td>
<td>20%</td>
</tr>
<tr>
<td>Females in Groups (&gt;2)</td>
<td>15%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>10%</td>
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Westminster Quay
Weekday Late Afternoon
Frequency of Groupings

Frequency

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<td>Single Females</td>
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</tr>
<tr>
<td>Males in Groups (≥2)</td>
<td>15%</td>
</tr>
<tr>
<td>Females in Groups (≥2)</td>
<td>10%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>35%</td>
</tr>
<tr>
<td>Males/Females in Groups</td>
<td>20%</td>
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Westminster Quay
Weekday Evening
Frequency of Groupings

![Bar Chart showing frequency of groupings:]
- Single Males
- Single Females
- Males in Groups (>2)
- Females in Groups (>2)
- Male/Female Pairs
- Males/Females in Groups

Frequency

Grouping

0%
5%
10%
15%
20%
25%
30%

Chart 1
Appendix A.4
Westminster Quay - Weekend Groupings
Westminster Quay
Weekend Noon
Frequency of Groupings

<table>
<thead>
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<tbody>
<tr>
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<tr>
<td>Single Females</td>
<td>20%</td>
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<tr>
<td>Males in Groups (≥2)</td>
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</tr>
<tr>
<td>Females in Groups (≥2)</td>
<td>10%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>30%</td>
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<tr>
<td>Males/Females in Groups</td>
<td>25%</td>
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Westminster Quay
Weekend Afternoon
Frequency of Groupings

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<table>
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<tr>
<td>Single Females</td>
<td>15%</td>
</tr>
<tr>
<td>Males in Groups (≥2)</td>
<td>10%</td>
</tr>
<tr>
<td>Females in Groups (≥2)</td>
<td>5%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>30%</td>
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<tr>
<td>Males/Females in Groups</td>
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```
Westminster Quay
Weekend Late Afternoon
Frequency of Groupings

Frequency

45%
40%
35% - -
30% - -
25%
20%
15%
10% +
5%
0%

Grouping

Single Males
Single Females
Males in Groups (≥2)
Females in Groups (≥2)
Male/Female Pairs
Males/Females in Groups
Westminster Quay
Weekend Evening
Frequency of Groupings

<table>
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<th>Frequency</th>
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<tr>
<td>Single Males</td>
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<tr>
<td>Single Females</td>
<td>15%</td>
</tr>
<tr>
<td>Males in Groups (&gt;2)</td>
<td>5%</td>
</tr>
<tr>
<td>Females in Groups (&gt;2)</td>
<td>10%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>45%</td>
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<tr>
<td>Males/Females in Groups</td>
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Appendix A.5
Steveston Landing - Weekday Activities
Frequency

0%  5%  10%  15%  20%  25%

Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Watching/Playing in Playground
Steveston Landing
Weekday Afternoon
Frequency of Activities

Activity

Frequency

0% 2% 4% 6% 8% 10% 12% 14% 16% 18%
Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults
Watching/Playing in Playground
Appendix A.6
Steveston Landing - Weekend Activities
Activities

Primary Sitting on Boardwalk
Primary Sitting in Plaza
Secondary Sitting on Boardwalk
Secondary Sitting in Plaza
Walking on Boardwalk
Walking in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchairing
Pushing Strollers
Kids Playing in Playground
Adults Watching/Playing in Playground

Frequency of Activities
Weekend Noon
Station Landing
Steveston Landing Weekend Afternoon Frequency of Activities

Activity

- Primary Sitting on Boardwalk
- Primary Sitting in Plaza
- Secondary Sitting on Boardwalk
- Secondary Sitting in Plaza
- Walking on Boardwalk
- Walking in Plaza
- Standing Stationary
- Leaning on Rail
- Biking
- Walking Dogs
- Wheelchairing
- Pushing Strollers
- Kids Playing in Playground
- Adults Watching/Playing in Playground

Frequency

- 0%
- 5%
- 10%
- 15%
- 20%
- 25%
- 30%
- 35%
Frequency of Activities
Weekend Late Afternoon
Strøget Landing

Activity

Primary Sitting in Boardwalk
Secondary Sitting in Plaza
Secondary Sitting on Boardwalk
Primary Sitting in Plaza
Standing Stationary
Leaning on Rail
Biking
Walking Dogs
Wheelchair
Pushing Strollers
Kids Playing in Playground
Watching/Playing in Playground
Pushing Strollers
Wheelchairing
Walking Dogs
Biking
Leaning on Rail
Standing Stationary
Walking in Plaza
Walking on Boardwalk
Primary Sitting on Boardwalk

Frequency
Frequency of Activities

Steveston Landing

Weekend Evening

Activity

Standing

Stationary

Leaning on Rail

Biking

Walking Dogs

Wheelchairing

Pushing Strollers

Kids Playing in Playground

Adults Watching/Playing in Playground

Primary Sitting on Boardwalk

Primary Sitting in Plaza

Secondary Sitting on Boardwalk

Secondary Sitting in Plaza

Walking on Boardwalk

Walking in Plaza
Appendix A.7

Steveston Landing - Weekday Groupings
Steveston Landing
Weekday Noon
Frequency of Groupings

- Single Males: 35%
- Single Females: 30%
- Males in Groups (>2): 25%
- Females in Groups (>2): 20%
- Male/Female Pairs: 15%
- Males/Females in Groups: 10%
- Others: 5%
Steveston Landing
Weekday Afternoon
Frequency of Groupings

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<td>Single Females</td>
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<tr>
<td>Male/Female Pairs</td>
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Steveston Landing
Weekday Late Afternoon
Frequency of Groupings

Groupings

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<td>Females in Groups (&gt;2)</td>
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</tr>
<tr>
<td>Male/Female Pairs</td>
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"Geweifft Chart 1"
Steveston Landing
Weekday Evening
Frequency of Groupings

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<td>5%</td>
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<tr>
<td>Females in Groups (&gt;2)</td>
<td>0%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
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<td>Males/Females in Groups</td>
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Appendix A.8
Steveston Landing - Weekend Groupings
Steveston Landing
Weekend Noon
Frequency of Groupings

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<tr>
<td>Single Females</td>
<td>20%</td>
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<td>Males in Groups (&gt;2)</td>
<td>25%</td>
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<tr>
<td>Females in Groups (&gt;2)</td>
<td>30%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>35%</td>
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<tr>
<td>Males/Females in Groups</td>
<td>30%</td>
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Steveston Landing
Weekend Afternoon
Frequency of Groupings

- Single Males
- Single Females
- Males in Groups (>2)
- Females in Groups (>2)
- Male/Female Pairs
- Males/Females in Groups
Steveston Landing
Weekend Late Afternoon
Frequency of Groupings

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<tr>
<td>Single Females</td>
<td>5%</td>
</tr>
<tr>
<td>Males in Groups (&gt;2)</td>
<td>20%</td>
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<tr>
<td>Females in Groups (&gt;2)</td>
<td>25%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
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<tr>
<td>Males/Females in Groups</td>
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Graph showing the frequency of different groupings at Steveston Landing on a weekend late afternoon.
Steveston Landing
Weekend Evening
Frequency of Groupings

Groupings

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<tr>
<td>Single Females</td>
<td>15%</td>
</tr>
<tr>
<td>Males in Groups (&gt;2)</td>
<td>20%</td>
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<tr>
<td>Females in Groups (&gt;2)</td>
<td>30%</td>
</tr>
<tr>
<td>Male/Female Pairs</td>
<td>35%</td>
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<tr>
<td>Males/Females in Groups</td>
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Appendix B

Sample Questionnaires for User Survey

B.1 Westminster Quay - Sample Questionnaire
B.2 Steveston Landing - Sample Questionnaire
Appendix B.1
Westminster Quay - Sample Questionnaire
Questionnaire

I am a graduate student in the School of Community and Regional Planning at the University of British Columbia. I am currently writing a thesis which examines the way people use public open spaces (parks, boardwalks, etc.) at the water's edge in sites which have undergone redevelopment from industrial uses to mixed (i.e., residential and commercial/retail) uses.

In order to understand how far people travel to come to this waterfront open space, how they travel, and why they have come here, I have assembled a list of five questions, which I would very much appreciate if you could take a few moments to answer. These are the questions:

1. How far did you travel to get to Westminster Quay?

2. Which municipality do you reside in?

3. How did you get to Westminster Quay today?
   a) by car
   b) by bus
   c) by SkyTrain
   d) walked
   e) by bicycle

4. What was your purpose for coming to Westminster Quay?
   a) to shop
   b) to eat
   c) to exercise (go for a walk, jog, bike ride, etc)
   d) to see the river
   e) to relax
   Other: ________________________________

5. How many times in one year do you come to Westminster Quay?

Thank you for participating in this questionnaire. Your responses and comments are much appreciated.
Appendix B.2

Steveston Landing - Sample Questionnaire
Questionnaire

I am a graduate student in the School of Community and Regional Planning at the University of British Columbia. I am currently writing a thesis which examines the way people use public open spaces (parks, boardwalks, etc.) at the water's edge in sites which have undergone redevelopment from industrial uses to mixed (meaning residential and commercial/retail) uses.

In order to understand how far people travel to come to this waterfront open space, how they travel, and why they have come here, I have assembled a list of five questions, which I would very much appreciate if you could take a few moments to answer. These are the questions:

1. How far did you travel to get to Steveston Landing?

2. Which municipality do you reside in?

3. How did you get to Steveston Landing today?
   a) by car
   b) by bus
   c) by SkyTrain
   d) walked
   e) by bicycle

4. What was your purpose for coming to Steveston Landing?
   a) to shop
   b) to eat
   c) to exercise (go for a walk, jog, bike ride, etc)
   d) to see the river
   e) to relax

   Other:

5. How many times in one year do you come to Steveston Landing?

Thank you for participating in this questionnaire. Your responses and comments are much appreciated.
Appendix C

User Survey Questionnaire Data

C.1 Westminster Quay - Demographic Profile
C.2 Westminster Quay - Distance Traveled From Residence
C.3 Westminster Quay - Mode of Transportation
C.4 Westminster Quay - Municipality of Residence
C.5 Westminster Quay - Number of Trips to Site
C.6 Westminster Quay - Purpose for Trips to Site
C.7 Steveston Landing - Demographic Profile
C.8 Steveston Landing - Distance Traveled From Residence
C.9 Steveston Landing - Mode of Transportation
C.10 Steveston Landing - Municipality of Residence
C.11 Steveston Landing - Number of Trips to Site
C.12 Steveston Landing - Purpose for Trips to Site
Appendix C.1

Westminster Quay - Demographic Profile of Respondents
# Westminster Quay

## Demographic Profile of Respondents

<table>
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<th>Females</th>
<th>Males</th>
<th>Total</th>
<th>Females</th>
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<td>0 to 15</td>
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<td>0%</td>
<td>0%</td>
<td>0</td>
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<td>0</td>
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<td>16 to 25</td>
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<td>0%</td>
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<td>26 to 35</td>
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<td>42%</td>
<td>32%</td>
<td>3</td>
<td>13</td>
<td>10</td>
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<td>36 to 45</td>
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<td>3%</td>
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<td>46 to 55</td>
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<td>0%</td>
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<td>56 to 65</td>
<td>13%</td>
<td>13%</td>
<td>0%</td>
<td>4</td>
<td>4</td>
<td>0</td>
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<td>66 to 75</td>
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<td>19%</td>
<td>19%</td>
<td>0</td>
<td>6</td>
<td>6</td>
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<td>75 and Older</td>
<td>23%</td>
<td>23%</td>
<td>0%</td>
<td>7</td>
<td>7</td>
<td>0</td>
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<td>100%</td>
<td>55%</td>
<td>14</td>
<td>31</td>
<td>17</td>
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Appendix C.2

Westminster Quay - Distance Traveled
From Residence
Westminster Quay
Distance Travelled From Residence
(In Miles)

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<th>Number</th>
<th>Percentage</th>
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<td>0%</td>
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<td>5 to 10</td>
<td>8</td>
<td>47%</td>
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<td>11 to 30</td>
<td>6</td>
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Appendix C.3
Westminster Quay - Mode of Transportation
Westminster Quay
Mode of Transportation Used
to Travel to Site

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<tr>
<th>Mode</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile</td>
<td>9</td>
<td>53%</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Bus</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>SkyTrain</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td>Walked</td>
<td>3</td>
<td>18%</td>
</tr>
</tbody>
</table>
Appendix C.4
Westminster Quay - Municipality of Residence
Westminster Quay
Municipality of Residence

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burnaby</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Coquitlam</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Delta</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Langley</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Maple Ridge</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>New Westminster</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>North Vancouver</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Port Coquitlam</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Port Moody</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Richmond</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Surrey</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>West Vancouver</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>White Rock</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Appendix C.5
Westminster Quay - Number of Trips to Site
Westminster Quay
Number of Trips to Site

<table>
<thead>
<tr>
<th>Trips</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Time</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Once in 5 Years</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Once in 3 Years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Once in 1 Year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>1 to 5 Times a Year</td>
<td>4</td>
<td>24%</td>
</tr>
<tr>
<td>6 to 10 Times a Year</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>11 to 24 Times a Year</td>
<td>4</td>
<td>24%</td>
</tr>
<tr>
<td>25 to 49 Times a Year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>50 to 99 Times a Year</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td>100 or More Times a Year</td>
<td>1</td>
<td>6%</td>
</tr>
</tbody>
</table>
Appendix C.6
Westminster Quay - Purpose for Trips to Site
Westminster Quay
Purpose for Trip to Site
(Multiple Responses per Respondent)

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Eat</td>
<td>8</td>
<td>47%</td>
</tr>
<tr>
<td>Exercise</td>
<td>8</td>
<td>47%</td>
</tr>
<tr>
<td>View River</td>
<td>6</td>
<td>35%</td>
</tr>
<tr>
<td>Relax</td>
<td>5</td>
<td>29%</td>
</tr>
<tr>
<td>Meet Friends</td>
<td>3</td>
<td>18%</td>
</tr>
<tr>
<td>Entertain Friends</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Entertain Children</td>
<td>6</td>
<td>35%</td>
</tr>
<tr>
<td>Walk Dog</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td>Watch People</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>See Fish</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Appendix C.7
Steveston Landing - Demographic Profile of Respondents
### Steveston Landing
Demographic Profile
of Respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Total</th>
<th>Males</th>
<th>Total</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 15</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>16 to 25</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>26 to 35</td>
<td>33%</td>
<td>58%</td>
<td>25%</td>
<td>14%</td>
<td>6%</td>
<td>17%</td>
</tr>
<tr>
<td>36 to 45</td>
<td>8%</td>
<td>13%</td>
<td>4%</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>46 to 55</td>
<td>0%</td>
<td>8%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>56 to 65</td>
<td>4%</td>
<td>4%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>66 to 75</td>
<td>8%</td>
<td>17%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>75 and Older</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Totals</td>
<td>54%</td>
<td>100%</td>
<td>46%</td>
<td>13%</td>
<td>24%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Appendix C.8

Steveston Landing - Distance Traveled From Residence
## Steveston Landing
### Distance Travelled From Residence
### (In Miles)

<table>
<thead>
<tr>
<th>Distance</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 1</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>2 to 4</td>
<td>7</td>
<td>29%</td>
</tr>
<tr>
<td>5 to 10</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>11 to 30</td>
<td>8</td>
<td>33%</td>
</tr>
<tr>
<td>31 or More</td>
<td>2</td>
<td>8%</td>
</tr>
</tbody>
</table>
Appendix C.9
Steveston Landing - Mode of Transportation
### Steveston Landing
**Mode of Transportation Used to Travel to Site**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile</td>
<td>11</td>
<td>46%</td>
</tr>
<tr>
<td>Motorbike</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Bus</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>SkyTrain</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>5</td>
<td>21%</td>
</tr>
<tr>
<td>Walked</td>
<td>6</td>
<td>25%</td>
</tr>
</tbody>
</table>
Appendix C.10

Steveston Landing - Municipality of Residence
<table>
<thead>
<tr>
<th>Municipality</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burnaby</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>Coquitlam</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Delta</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Langley</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Maple Ridge</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>New Westminster</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>North Vancouver</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>Port Coquitlam</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Port Moody</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Richmond</td>
<td>10</td>
<td>42%</td>
</tr>
<tr>
<td>Surrey</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>6</td>
<td>25%</td>
</tr>
<tr>
<td>West Vancouver</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>White Rock</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>8%</td>
</tr>
</tbody>
</table>
Appendix C.11
Steveston Landing - Number of Trips to Site
### Steveston Landing
#### Number of Trips to Site

<table>
<thead>
<tr>
<th>Trips</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Time</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>Once in 5 Years</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Once in 3 Years</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Once in 1 Year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>1 to 5 Times a Year</td>
<td>7</td>
<td>29%</td>
</tr>
<tr>
<td>6 to 10 Times a Year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>11 to 24 Times a Year</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>25 to 49 Times a Year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>50 to 99 Times a Year</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>100 or More Times a Year</td>
<td>3</td>
<td>13%</td>
</tr>
</tbody>
</table>
Appendix C.12

Steveston Landing - Purpose for Trips to Site
### Steveston Landing
### Purpose for Trip to Site
(Multiple Responses per Respondent)

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop</td>
<td>7</td>
<td>29%</td>
</tr>
<tr>
<td>Eat</td>
<td>5</td>
<td>21%</td>
</tr>
<tr>
<td>Exercise</td>
<td>10</td>
<td>42%</td>
</tr>
<tr>
<td>View River</td>
<td>10</td>
<td>42%</td>
</tr>
<tr>
<td>Relax</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>Meet Friends</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>Entertain Friends</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Entertain Children</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Walk Dog</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Watch People</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>See Fish</td>
<td>5</td>
<td>21%</td>
</tr>
</tbody>
</table>